
The Results of Fish Tissue Monitoring in Tennessee 1992-1997



Division of Water Pollution Control
Tennessee Department of Environment and Conservation



THE RESULTS OF
FISH TISSUE MONITORING IN TENNESSE
1992 - 1997

prepared by

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INTRODUCTION

The Commissioner shall have the power, duty, and responsibility to...post or cause to be posted such signs as required to give notice to the public of the potential or actual dangers of specific uses of such waters.

Tennessee Water Quality Control Act

The Tennessee Department of Environment and Conservation (TDEC) posts warning signs on streams or lakes in which public health is threatened or endangered. In Tennessee, the most common reasons for a river or lake to be posted are the presence of sewage bacteria or other contaminants in the water, sediment, or fish of a waterbody. There are currently 52 bodies of water that are posted due to pollution. (See the list on page 4.)

Nickajack Reservoir near Chattanooga has a fishing advisory due to elevated PCB levels in catfish. Pregnant women, nursing mothers, and children, plus others that may have had previous exposure to PCBs, are warned to avoid eating these fish. All others are advised to limit consumption of Nickajack Reservoir catfish to one meal per month.

In cooperation with agencies like the Tennessee Wildlife Resources Agency (TWRA), Tennessee Valley Authority (TVA), Tennessee Department of Health, and U. S. Environmental Protection Agency (EPA), TDEC continues to collect and analyze fish for the purpose of determining areas with elevated contaminants. This report, which includes only data collected by TDEC, includes both lakes and streams samples between 1992 and 1997.

When fish tissue samples show levels of a contaminant higher than established criteria, the waterbody is posted and the public is advised of the danger. If needed, TWRA can enforce a fishing ban. Approximately 84,100 lake acres, and 142 river miles are currently posted due to contaminated fish. When the Department issues new advisories or provides an updated list, signs are placed at significant public access points and a press release is submitted to local newspapers. The list of current advisories has historically been published in TWRA's fishing regulations guide.



REDUCING RISKS FROM CONSUMPTION OF CONTAMINATED FISH

The best way to protect your health and that of your family is by following the advice provided by the Department of Environment and Conservation. Cancer risk is accumulated over a lifetime of exposure to a contaminant. For that reason, eating an occasional fish, even from an area with a fishing advisory, will not measurably increase your cancer risk.

At greatest risk are people who eat contaminated fish from an area for a number of years, such as recreational or subsistence fishermen; or groups more sensitive to contaminants such as infants and persons with a previous occupational exposure to the particular contaminant. Studies have shown that contaminants can cross the placental barrier and enter the baby's body, increasing the risk of developmental problems. These substances also concentrate in breast milk.

The Division's goal in issuing fishing advisories is to provide the information necessary for people to make informed choices about their health. People concerned about their health will likely choose to eat fish from uncontaminated sites.

If you chose to eat fish in areas with elevated contaminant levels, here is some advice on how to reduce this risk:

- **Throw back the big ones.** Smaller fish generally have lower concentrations of contaminants.
- **Avoid fatty fish.** Organic carcinogens such as DDT, PCBs, and dioxin accumulate in fatty tissue. (In contrast however, mercury tends to accumulate in muscle tissue.) Large carp and catfish tend to be fattier than gamefish. Additionally, the lifestyles of carp, sucker, buffalo, and catfish tend to associate them with the sediments--where contaminants also concentrate.
- **Broil or grill your fish.** These cooking techniques allow the fat to drip away. Frying seals the fat and contaminants into the food.
- **Clean your catch so that fatty tissue is discarded. (Remember, this technique may not provide protection for mercury, which tends to accumulate in muscle tissue.)**

The U. S. Food and Drug Administration (FDA) has the primary role in determining what levels of contaminants are safe and may be allowed in foods, including fish, sold in interstate commerce. The EPA also has a significant role in this area through development of health protection criteria. However, the responsibility for warning people of localized health risks due to contaminated fish in surface waters has historically belonged to the states.

Both FDA and EPA perform and review research on laboratory animals to determine the level of each substance that is toxic. This information is then used to determine the potential harm to human health. However, several assumptions must be made, such as how many pounds of fish the average consumer eats and what is an acceptable level of risk.

The Department as well as other agencies, routinely collect and analyze fish tissue in Tennessee. We screen the results of these analyses and compare them to the criteria developed by FDA and EPA. Since some species of fish are more likely to contain contaminants than others, various types of fish are collected and analyzed. When these samples show levels of a contaminant higher than the established criteria, the waterbody is posted and the public is advised of the danger. If needed, TWRA can enforce a fishing ban.

The FDA, EPA, and the Department realize that not everyone is considered an average or typical consumer, as defined by standard criteria. For this reason, the Department identifies atypical consumers and issues a more protective advisory for these populations when a body of water is posted. By definition, atypical consumers are individuals who are more sensitive to specific pollutants than is the population in general. Studies have shown that atypical consumers are more susceptible to many contaminants and, therefore, more at risk. These groups of consumers include, but are not limited to: children, pregnant or nursing women, and subsistence fishermen.

QUESTIONS COMMONLY ASKED ABOUT FISHING ADVISORIES

How Do I Know Where the Contaminated Streams Are?

When the Department issues new advisories or provides an updated list, signs are placed at significant public access points and a press release is submitted to local newspapers. The list of current advisories has historically been published in TWRA's fishing regulations guide.

Will I Be Harmed By Occasional Consumption of Contaminated Fish?

Cancer risk is accumulated over a lifetime of exposure to a contaminant. For that reason, eating an occasional fish, even from an area with a fishing advisory, will not measurably increase your cancer risk.

If a Lake Has a Fishing Advisory, Is It Safe to Swim or Drink Treated Water From It?

These contaminants typically do not concentrate in the water in measurable amounts. Fish and sediment do accumulate these materials, however. Thus, the risk comes from eating fish, not from swimming or drinking properly treated water.

The Risk From Eating Contaminated Fish Is Much Smaller Than Risks People Accept Every Day. Why Does the Division Try to Scare People Unnecessarily?

Certainly, the risks associated with eating contaminated fish is less than risks people choose to accept such as driving a car without a seatbelt or smoking cigarettes. Both are things people may choose to do and they are also free to choose to eat contaminated fish. The Division's goal in issuing fishing advisories is to provide the information necessary for people to make informed choices about their health.

People concerned about their health will likely choose to eat fish from uncontaminated sites.

What Steps Does the Division Take Against Those Responsible for Causing the Contamination?

Unfortunately, many contaminants found in fish tissue today such as DDT, PCBs, and chlordane were already widely distributed in the environment before they were banned. The levels of these substances will slowly decrease over time. Where current discharges exist, the Division places very restrictive limits on the amounts of these substances that can be legally discharged and requires companies to monitor to insure that they are not causing a problem.

CURRENT FISH TISSUE ADVISORIES (September, 1998. This list subject to revision.)

STREAM	COUNTY	PORTION	POLLUTANT	COMMENTS
Loosahatchie River	Shelby	Mile 0.0 - 20.9	Chlordane, Other Organics	Fish should not be consumed.
Wolf River	Shelby	Mile 0.0 - 18.9	Chlordane, Other Organics	Fish should not be consumed
Mississippi River	Shelby	MS line to mile 745	Chlordane, Other Organics	Fish should not be consumed. Commercial fishing prohibited by TWRA.
McKellar Lake & Nonconnah Creek	Shelby	Mile 0.0 to 1.8	Chlordane, Other Organics	Fish should not be consumed. Advisory ends at Horn Lake Road bridge.
North Fork Holston River	Sullivan, Hawkins	Mile 0.0 - 6.2	Mercury	Fish should not be consumed. Advisory goes to TN/VA line.
East Fork of Poplar Creek incl. Poplar Ck embayment	Anderson, Roane	Mile 0.0 - 15.0	Mercury, PCBs	Fish should not be consumed. Avoid contact with water also.
Chattanooga Creek	Hamilton	Mouth to GA line	PCBs, chlordane,	Fish should not be consumed. Avoid contact with water also.
Woods Reservoir	Franklin	Entirety	PCBs	Catfish should not be consumed.
Fort Loudoun Reservoir	Loudon, Knox, Blount	Entirety (46 miles)	PCBs	Commercial fishing for catfish prohibited by TWRA. Catfish, largemouth bass over two pounds, or any largemouth bass from the Little River embayment should not be consumed.
Tellico Lake	Loudon	Entirety	PCBs	Catfish should not be consumed.
Melton Hill Reservoir	Knox, Anderson	Entirety	PCBs	Catfish should not be consumed.
Watts Bar Reservoir	Roane, Meigs, Rhea, Loudon	Tennessee River portion	PCBs	Catfish, striped bass, & hybrid striped bass-white bass should not be consumed. Precautionary advisory* for whitebass, sauger, carp, smallmouth buffalo and largemouth bass.
Watts Bar Reservoir	Roane, Anderson	Clinch River arm	PCBs	Striped bass should not be consumed. Precautionary advisory for catfish and sauger.*
Boone Reservoir	Sullivan, Washington	Entirety	PCBs, chlordane	Precautionary advisory for carp and catfish.*
Nickajack Reservoir	Hamilton, Marion	Entirety	PCBs	Precautionary advisory for catfish.*
Pigeon River	Cocke	N.C. line to Douglas Res	Dioxin	Precautionary advisory for carp, catfish, and redbreast sunfish.*

*Precautionary Advisory - Children, pregnant women, and nursing mothers should not consume the fish species named. All other persons should limit consumption of the named species to one meal per month.

GENERAL FISH TISSUE SAMPLING INFORMATION

Unless otherwise noted, all fish tissue samples were collected and processed by the Aquatic Biology Section of the Division of Environmental Laboratories within the Tennessee Department of Health. With the exception of dioxin, all analyses of organic and inorganic contaminants were performed by the Division of Environmental Laboratories.

Fish tissue sampling stations were selected by the Division of Water Pollution Control and identified in the annual monitoring workplans for fiscal years 1992 – 1997. Sample collection is done by means of either electrofishing and/or nets. At each site, biologists attempted to collect at least five specimens of a carp, catfish, and gamefish species. Preferred species are common carp, channel catfish, and largemouth bass, respectively. Where these fish are not readily available, smallmouth bass, sunfish, suckers, buffalo, flathead catfish, and bullhead catfish are substituted.

Unless otherwise noted, all samples were fillets that include the “belly flap” (a layer of fat associated with the fillet). In the data tables, all data except dioxin are presented as parts per million (ppm). Dioxin data is presented as parts per trillion (ppt). ND and NT means not detected and not tested, respectively.

Samples analyzed by the Division of Environmental Laboratories go through an appropriate quality control process. The lab is approved by the Environmental Protection Agency. Dioxin analysis is performed by a contract laboratory. During the period covered by this report, this contact laboratory was generally Wright State University.

A portion of this work was funded by a Section 314 Statewide Lakes Assessment Grant provided by EPA.

BARREN FORK RIVER

The Barren Fork River has its headwaters in “the Barrens” area of Coffee and Cannon counties. It flows through Warren County where it has a confluence with the Collins River at river mile 21.5. The stream flows through the mostly level terrain of the Eastern Highland Rim ecological region. Land uses include pastureland and nursery operations. McMinnville is the only urbanized area along the Barren Fork.

The Hydrologic Unit Code assigned to the Collins River Watershed by USGS is 05130107. The Barren Fork River has a drainage area of 307 square miles. According to Tennessee’s 1996 305(b) Report, the Barren Fork River is fully supporting of its designated uses. Fish sampling was done on the Barren Fork River in June of 1995. The following tables show species of fish taken as well as results of tests performed by the Environmental Laboratories.

Barren Fork River Fish Collection Table

Sampling location: River mile 2.5 [McMinnville] near Spring Cave
Collection date: June 14, 1995

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipids
Carp	9507056-01	1	10 lb 1 oz	2.51
Carp	9507056-02	1	6 lb 11 oz	2.99
Smallmouth bass	9507056-03	1	2 lb 6 oz	0.84
Smallmouth bass	9507056-04	4	1 lb 10 oz	0.24
Golden rehorse	9507056-05	5	1 lb 8 oz	0.97
Northern hogsucker	9507056-06	4	1 lb 9 oz	0.62

Barren Fork River Fish Metal Data*

Sampling location: River mile 2.5 [McMinnville] near Spring Cave
Collection date: June 14, 1995

Type of fish	Lab number	Mercury	Lead	Copper	Chromium
Carp	9507056-01	0.15	0.01	1.00	0.05
Carp	9507056-02	0.09	0.02	1.30	0.05
Smallmouth bass	9507056-03	0.17	ND	1.30	0.07
Smallmouth bass	9507056-04	0.22	ND	0.20	0.06
Golden redhorse	9507056-05	0.17	ND	2.90	0.07
Northern hogsucker	9507056-06	0.11	ND	2.20	0.06

*Arsenic and cadmium were also analyzed and found below detection levels.

Barren Fork River Fish Organic Data

Type of fish	Lab Number	DDT ppm	Chlordane ppm	PCBs ppm
Carp	9507056-01	0.014	ND	0.741
Carp	9507056-02	0.015	0.014	0.057
Smallmouth bass	9507056-03	ND	ND	0.154
Smallmouth bass	9507056-04	ND	ND	0.081
Golden redhorse	9507056-05	ND	ND	0.109
Northern hogsucker	9507056-06	ND	ND	0.103

* Aldrin, dieldrin, endrin, alpha-BHC, lindane, hexachlorobenzene, and methoxychlor were found to be below detection levels.

BEECH CREEK

Beech Creek in Wayne County is a tributary of the Tennessee River at river mile 155. It is part of the Western Highland Rim ecological region. Streams in the area have sand substrates with coarse chert gravel. In the 1996 305(b) Report, Beech Creek was assessed as being fully supporting of designated uses from the mouth on the Tennessee River to the confluence with Smith Branch. From Smith Branch to the headwaters, Beech Creek is partially supporting due to PCB contamination from the Waynesboro landfill. The Waynesboro landfill is a former Superfund site. During sampling in 1993, PCBs were found in sediment, fish tissue, and water.

Fish were collected at three sampling points in the Beech Creek survey. In February of 1994, fish were taken at river mile 2 in Wayne County. In October of 1994, sampling took place near Waynesboro. The final sampling occurred in November of 1994, a half mile upstream of the Tennessee River confluence. The following tables list the results of the study.

Beech Creek Fish Collection Tables

Sampling location: Beech Creek at river mile 2 in Wayne County
Collection date: February 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
Channel catfish	94-02-0161	5	3 lb 10 oz	17.0
Spotted sucker	94-02-0162	5	2 lb 1 oz	2.14

Sampling location: Beech Creek near Waynesboro
Collection date: October 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
Rock bass	9410099-01	1	14 oz	NT
Rock bass	9410099-02	4	7 oz	NT
Hogsucker	9410099-03	1	1 lb 8 oz	NT
Hogsucker	9410099-04	6	6 oz	NT
Creek chub	9410099-05	15	3 oz	NT

Sampling location: Beech Creek, half mile upstream of the TN River confluence, November 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
Channel catfish	9501036-01	1	5 lb 8 oz	11.3
Channel catfish	9501036-02	1	5 lb 0 oz	11.5
Channel catfish	9501036-03	1	4 lb 3 oz	10.1
Channel catfish	9501036-04	3	4 lb 1 oz	9.98
Carp	9501036-05	1	11 lb 1 oz	0.89
Carp	9501036-06	1	9 lb 10 oz	0.67
Carp	9501036-07	1	8 lb 3 oz	0.68
Carp	9501036-08	1	6 lb 6 oz	0.67
LgMo bass	9501036-09	1	2 lb 11 oz	0.90
LgMo bass	9501036-10	4	1 lb 4 oz	0.0

Beech Creek Organic Data Tables

Sampling location: Beech Creek at river mile 2 in Wayne County
Collection date: February 1994

Type of fish	Lab number	PCBs ppm	DDT ppm	Chlordane Ppm
Channel catfish	94-02-0161	0.579	0.860	0.045
Spotted sucker	94-02-0162	ND	0.047	ND

Sampling location: Beech Creek near Waynesboro
Collection date: October 1994

Type of fish	Lab number	PCBs ppm	DDT ppm	Chlordane ppm
Rock bass	9410099-01	0.397	ND	ND
Rock bass	9410099-02	0.638	ND	ND
Hogsucker	9410099-03	3.32	ND	ND
Hogsucker	9410099-04	3.40	ND	ND
Creek chub	9410099-05	3.40	ND	ND

Beech Creek Organic and Metal Data Table

Sampling location: Beech Creek, a half mile upstream of the Tennessee River confluence
Collection date: November 1994

Type of fish	Lab number	PCBs Ppm	DDT ppm	Chlordane ppm	Mercury ppm	Arsenic ppm	Copper ppm
Channel catfish	9501036-01	ND	0.153	0.01	0.06	0.11	1.10
Channel catfish	9501036-02	ND	0.099	0.007	0.04	0.14	0.30
Channel catfish	9501036-03	ND	0.088	0.023	0.11	0.05	0.30
Channel catfish	9501036-04	ND	0.206	0.014	0.09	0.09	0.20
Carp	9501036-05	ND	0.028	ND	0.25	ND	0.70
Carp	9501036-06	ND	0.014	ND	0.21	ND	1.10
Carp	9501036-07	ND	ND	ND	0.25	ND	0.70
Carp	9501036-08	ND	0.008	ND	0.19	ND	0.80
LgMo bass	9501036-09	ND	0.020	ND	0.86	ND	3.00
LgMo bass	9501036-10	ND	ND	ND	0.29	ND	1.30

ND= Not detected. Other metals that were analyzed for the 9501036-01 to 9501036-10 series were cadmium, chromium, and lead with non detectable amounts resulting. Fish 9501036-01 was tested for dioxin with 2.00 ppt resulting. The Beech Creek fish samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish.

BOONE RESERVOIR

Boone Reservoir is a 4400 acre TVA impoundment in the South Fork Holston River Watershed. Boone Reservoir and 12 miles of tributaries were assessed as partially supporting their designated uses in Tennessee's 1996 305(b) Report. A precautionary fishing advisory for carp and catfish is currently posted on Boone Reservoir due to PCBs and chlordane pollution.

Boone Reservoir was sampled at three collection points in 1994. The following tables depict the results of the study.

Boone Reservoir Fish Collection and Dioxin Tables

Sampling location: The Watauga arm of Boone Lake at river mile 4
Collection date: November 2, 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin Ppt
Channel catfish	9501033-01	1	5 lb 13 oz	6.75	3.53
Channel catfish	9501033-02	1	4 lb 12 oz	3.26	NT
Channel catfish	9501033-03	3	2 lb 1 oz	2.03	NT
LgMo bass	9501033-04	1	3 lb 12 oz	0.42	NT
LgMo bass	9501033-05	4	2 lb 7 oz	1.33	NT
Carp	9501033-06	1	11 lb 10 oz	0.245	ND
Carp	9501033-07	4	5 lb 5 oz	1.81	NT

Sampling location: Boone Lake at the dam
Collection date: November 2, 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin ppt
Channel catfish	9501034-01	1	3 lb 12 oz	4.98	1.82
Channel catfish	9501034-02	1	1 lb 8 oz	4.10	NT
LgMo bass	9501034-03	1	3 lb 10 oz	1.48	NT
LgMo bass	9501034-04	4	2 lb 11 oz	1.51	NT
Carp	9501034-05	4	3 lb 14 oz	1.44	NT

Sampling location: The Holston arm of Boone Lake at river mile 22
Collection date: November 2, 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin ppt
Channel catfish	9501035-01	1	3 lb 6 oz	3.53	0.17
Channel catfish	9501035-02	2	1 lb 15 oz	3.17	NT
LgMo bass	9501035-03	1	3 lb 8 oz	0.64	NT
LgMo bass	9501035-04	4	2 lb 2 oz	0.55	NT
Carp	9501035-05	1	6 lb 12 oz	0.93	0.43
Carp	9501035-06	4	4 lb 3 oz	2.61	NT
SmMo bass	9501035-07	1	3 lb 14 oz	1.21	NT
SmMo bass	9501035-08	3	2 lb 3 oz	1.96	NT

Boone Reservoir Fish Tissue: Organic and Metal Data Tables

Sampling location: The Watauga arm of Boone Lake at river mile 4
Collection date: November 2, 1994

Type of fish	Lab number	PCBs Ppm	DDT ppm	Chlordane Ppm	HCb ppm	Mercury ppm	Copper ppm
Channel catfish	9501033-01	ND	ND	ND	ND	0.25	0.60
Channel catfish	9501033-02	0.562	ND	0.068	0.005	0.19	0.70
Channel catfish	9501033-03	0.148	ND	0.044	ND	0.18	0.60
LgMo bass	9501033-04	ND	ND	0.006	ND	0.55	3.90
LgMo bass	9501033-05	ND	ND	0.020	ND	0.21	0.60
Carp	9501033-06	ND	ND	ND	ND	0.11	0.50
Carp	9501033-07	0.330	ND	0.016	ND	0.14	0.60

Undetectable metals in the the 9501033-01 to 9501033-07 series were arsenic, cadmium, chromium, and lead.

Sampling location: Boone Lake at the dam
Collection date: November 2, 1994

Type of fish	Lab number	PCBs Ppm	Chlordane ppm	HCb Ppm	Mercury ppm	Copper ppm	Arsenic ppm
Channel catfish	9501034-01	0.440	0.070	0.002	0.18	0.40	ND
Channel catfish	9501034-02	0.807	0.099	0.001	0.15	0.20	ND
LgMo bass	9501034-03	0.151	0.024	ND	0.24	0.20	0.07
LgMo bass	9501034-04	ND	0.017	ND	0.19	0.20	0.07
Carp	9501034-05	ND	0.016	ND	0.19	0.40	ND

Sampling location: The Holston arm of Boone Lake at river mile 22
Collection date: November 2, 1994

Type of fish	Lab number	PCBs Ppm	DDT ppm	Chlordane ppm	HCB Ppm	Mercury ppm	Copper Ppm
Channel catfish	9501035-01	0.536	0.032	0.066	0.003	0.26	0.40
Channel catfish	9501035-02	0.297	0.016	0.047	0.003	0.16	0.30
LgMo bass	9501035-03	0.143	0.003	0.008	ND	0.30	0.20
LgMo bass	9501035-04	0.098	0.002	0.006	ND	0.24	3.40
Carp	9501035-05	0.156	0.004	0.004	ND	0.19	0.40
Carp	9501035-06	0.722	0.028	0.025	0.001	0.17	1.00
SmMo bass	9501035-07	0.508	0.003	ND	ND	0.27	0.20
SmMo bass	9501035-08	0.332	0.004	0.012	ND	0.22	0.90

Other metals that were analyzed for the 9501035-01 to 9501035-08 series were cadmium, chromium, and lead with non detectable amounts resulting. Samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, and methoxychlor however; none were detected in the fish.

CENTER HILL RESERVOIR

Center Hill Reservoir is a U. S. Army Corp of Engineers impoundment on the Caney Fork River. It covers approximately 23,051 acres in DeKalb, Putnam, Warren and White Counties. The lake is a water source for the cities of Smithville and Cookeville. The lake is also utilized for recreation, wildlife habitat, flood control, and power generation. Center Hill is part of the Outer Nashville Basin and Eastern Highland Rim ecological regions.

Water quality is good at Center Hill with a 305(b) assessment of fully supporting designated uses. Mine Lick Creek is a tributary that is posted due to bacteriological contamination from Baxter STP.

Two fish tissue surveys were conducted on Center Hill Reservoir. Fish collections took place in December of 1992 and November 1993. Dioxin testing was performed by Triangle Laboratory. The tables below list results.

Center Hill Reservoir Fish Collection Tables

Sampling location: Center Hill at Falling Water River
Collection date: December 14, 1992

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
Carp	93-01-0026	5	9 lb 12 oz	1.36
Largemouth bass	93-01-0027	5	3 lb 14 oz	1.36
Channel catfish	93-01-0028	5	2 lb 1 oz	1.36

Type of fish	Lab number	PCBs (ppm)	DDT (ppm)	Chlordane ppm	Mercury ppm	Copper Ppm
Carp	93-01-0026	0.048	ND	0.021	0.07	0.6
LgMo bass	93-01-0027	0.018	0.017	0.020	0.17	0.2
Channel catfish	93-01-0028	0.018	0.017	0.020	0.12	0.4

The Center Hill Reservoir fish samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish. Other metals tested were arsenic, chromium, cadmium, and lead with non detectable amounts resulting.

Sampling location: Center Hill dam
Collection date: December 15, 1992

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
LgMo bass	93-01-0033	1	3 lb 14 oz	0.40
LgMo bass	93-01-0034	1	2 lb 14 oz	0.59
LgMo bass	93-01-0035	1	2 lb 5 oz	1.36
LgMo bass	93-01-0036	1	2 lb 5 oz	0.78
LgMo bass	93-01-0037	1	1 lb 14 oz	2.72
Spotted sucker	93-01-0038	5	2 lb 13 oz	1.17
Walleye	93-01-0039	4	2 lb 5 oz	1.55

Sampling location: Center Hill dam
Collection date: December 15, 1992

Type of fish	Lab number	PCBs Ppm	DDT Ppm	Chlordane ppm	Mercury ppm	Copper ppm
LgMo bass	93-01-0033	0.225	0.015	0.007	0.37	0.2
LgMo bass	93-01-0034	0.23	0.033	0.007	0.29	0.2
LgMo bass	93-01-0035	0.078	0.012	0.007	0.17	0.4
LgMo bass	93-01-0036	0.117	0.017	0.004	0.10	0.2
LgMo bass	93-01-0037	0.12	0.010	0.007	0.15	0.4
Spotted sucker	93-01-0038	0.12	0.006	0.004	0.07	0.4
Walleye	93-01-0039	0.12	0.006	0.005	0.09	0.4

Sampling location: Highway 70 bridge
Collection date: December 21, 1992

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin ppt
LgMo bass	93-01-0029	5	3 lb 8 oz	1.36	NT
Carp	93-01-0030	3	14 lb 4 oz	5.26	NT
Channel catfish	93-01-0031	1	6 lb 5 oz	NT	0.02
Channel catfish	93-01-0032	5	3 lb 7 oz	5.09	NT

Type of fish	Lab number	PCBs (ppm)	DDT (ppm)	Chlordane (ppm)
LgMo bass	93-01-0029	0.042	0.021	0.020
Carp	93-01-0030	2.75	0.249	0.120
Channel catfish	93-01-0031	NT	NT	NT
Channel catfish	93-01-0032	0.223	0.072	0.059

The Center Hill Reservoir fish samples (93-01-0029 to 93-01-0032) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish.

Type of fish	Lab number	Mercury Ppm	Copper ppm	Arsenic ppm
LgMo bass	93-01-0029	0.16	0.2	0.12
Carp	93-01-0030	0.08	0.6	ND
Channel catfish	93-01-0031	NT	NT	NT
Channel catfish	93-01-0032	0.09	0.6	ND

Other metals tested were chromium, cadmium, and lead with non detectable amounts resulting

Sampling location: Highway 70 Bridge/Fall Creek
Collection date: November 22, 1993

Type of fish	Lab number	Number of fish	Avg Fish Weight	PCBs Ppm	DDT ppm	Chlordane Ppm
LgMo bass	94-01-0083	5	2 lb 10 oz	0.010	0.022	ND
Channel catfish	94-01-0084	4	2 lb	0.278	0.027	0.050
Spotted sucker	94-01-0085	5	2 lb 3 oz	ND	0.004	ND

Samples (94-01-0083 to 94-01-0085) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish. Percent lipids were not tested on fish (94-01-0083 to 94-01-0085).

Type of fish	Lab number	Mercury Ppm	Copper ppm	Arsenic ppm	Lead ppm
LgMo bass	94-01-0083	0.127	0.05	0.11	ND
Channel catfish	94-01-0084	0.101	0.10	ND	0.04
Spotted sucker	94-01-0085	0.057	0.10	ND	ND

Other metals tested were chromium and cadmium with non detectable amounts resulting.

CHATTANOOGA CREEK

Chattanooga Creek flows through the City of Chattanooga and has long been a heavily impacted stream. Contaminated sediment from historical industrial discharges as well as sewage bypasses have left Chattanooga Creek arguably one of the most polluted streams in the state of Tennessee. In addition to the organic contamination of sediment and fish tissue, the creek is currently posted against water contact due to bacteriological contamination from bypassing and urban runoff. Chattanooga Creek is a Superfund site and remediation efforts to clean up contaminated sediment recently occurred.

One of the more recent fish tissue studies conducted by the Division of Water Pollution Control on Chattanooga Creek occurred in August of 1995. The tables below give results of the organic, metals, and dioxin assays performed.

Chattanooga Creek Fish Tissue Data Tables

Sample location: 1/4 mile from the mouth
Collection date: August 24, 1995

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Mercury ppm	Chromium ppm	Copper ppm
Channel catfish	9508156-01	1	5 lb 15 oz	4.82	0.02	0.04	0.4
Channel catfish	9508156-02	4	3 lb 6 oz	4.29	0.07	0.04	0.3
Spotted sucker	9508156-03	4	1 lb 11 oz	1.15	0.09	0.05	0.8
LgMo bass	9508156-04	3	10 oz	0.40	0.14	0.12	14.7

Other metals tested were arsenic, lead, and cadmium with non detectable amounts resulting.

Type of fish	Lab number	PCBs Ppm	DDT ppm	Chlordane ppm	Dioxin ppt
Channel catfish	9508156-01	0.482	0.034	0.050	5.95
Channel catfish	9508156-02	0.725	0.032	0.037	5.55
Spotted sucker	9508156-03	ND	0.007	0.005	NT
LgMo bass	9508156-04	ND	0.005	ND	NT

Type of fish	Lab number	Dieldrin Ppm	Lindane ppm	HCB ppm	aBHC ppm
Channel catfish	9508156-01	0.080	0.002	0.005	0.017
Channel catfish	9508156-02	ND	0.001	0.003	0.009
Spotted sucker	9508156-03	ND	ND	0.003	0.004
LgMo bass	9508156-04	ND	ND	ND	ND

The Chattanooga Creek fish samples (9508156-01 to 9508156-04) were also tested for, aldrin, endrin, and methoxychlor however; none were detected in the fish.

CHEATHAM RESERVOIR

The Cumberland River has been impounded by the Corp of Engineers in Middle Tennessee to form Cheatham Reservoir. The lake is in Cheatham and Davidson County and flows through Nashville. Although there are no fishing advisories on Cheatham Reservoir, there are sixteen bacteriological advisories along the reservoir and its tributaries. These advisories warn against recreational contact with the water, including fishing. The elevated bacteria levels are due to Metro Nashville bypassing and collection system failure.

The portion of the Cheatham Reservoir selected for the 1992 fish tissue study was near downtown Nashville at river miles 185.7 and 191.1. An earlier study in November and December of 1991 indicated low numbers of fish at the downstream station, possibly due to the influence of the sewage treatment plant. The fish were tested as individual samples. The tables below list results.

Cheatham Reservoir Fish Collection Table

Sampling location: Shelby Street Bridge below the Nashville Thermal Plant at river mile 191.1.
Sampling date: August, September 1992

Type of fish	Lab number	Avg Fish Weight	% Lipid	Mercury Ppm	Copper ppm	Arsenic ppm
Spotted bass	92-11-0050	2 lb 3 oz	0.97	0.03	0.2	ND
Carp	92-11-0051	11 lb 12 oz	1.77	0.04	0.5	ND
Spotted bass	92-11-0052	2 lb 13 oz	1.18	0.09	0.2	0.05
Channel catfish	92-11-0053	2 lb 2 oz	8.93	0.02	0.2	ND
Carp	92-11-0054	6 lb 4 oz	3.89	0.02	0.5	ND
Carp	92-11-0055	5 lb	3.51	0.02	0.6	ND
Carp	92-11-0056	3 lb	0.78	0.03	0.3	ND
Spotted bass	92-11-0057	2 lb 8 oz	1.96	0.10	0.2	0.075

Type of fish	Lab number	PCBs ppm	DDT ppm	Chlordane ppm	HCB ppm	DIOXIN ppt
Spotted bass	92-11-0050	0.046	0.007	0.008	ND	NT
Carp	92-11-0051	0.214	0.023	0.012	ND	1.90
Spotted bass	92-11-0052	0.143	0.009	0.014	ND	NT
Channel catfish	92-11-0053	0.214	0.054	0.031	ND	NT
Carp	92-11-0054	0.215	0.015	0.020	0.002	NT
Carp	92-11-0055	0.049	0.015	0.015	ND	NT
Carp	92-11-0056	0.033	0.003	0.011	ND	NT
Spotted bass	92-11-0057	0.322	0.027	0.021	ND	NT

The Cheatham Reservoir fish samples (92-11-0050 to 92-11-0057) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, and methoxychlor however; none were detected in the fish.

Cheatham Reservoir Fish Collection Table

Sampling location: Bordeaux Bridge near downtown Nashville, river mile 185.7
 Sampling date: August, September 1992

Type of fish	Lab Number	Avg. Fish Weight	% Lipid	Dioxin ppt
Channel catfish	92-11-0042	1 lb 10 oz	3.94	NT
SmMo buffalo	92-11-0043	2 lb 15 oz	2.56	NT
Sauger	92-11-0044	1 lb 11 oz	0.98	NT
Carp	92-11-0045	3 lb 2 oz	1.58	NT
Carp	92-11-0046	3 lb 4 oz	1.17	NT
Carp	92-11-0047	3 lb 6 oz	0.80	0.89
Carp	92-11-0048	2 lb 11 oz	0.97	NT
Carp	92-11-0049	2 lb 6 oz	0.59	NT

Cheatham Reservoir Organics & Metals Data Table

Type of fish	Lab number	PCBs ppm	DDT ppm	Chlordane ppm	Mercury ppm	Copper ppm
Channel catfish	92-11-0042	0.291	0.030	0.027	0.02	1.2
SmMo buffalo	92-11-0043	2.373	0.304	0.053	0.03	0.4
Sauger	92-11-0044	0.080	0.108	0.012	0.10	0.2
Carp	92-11-0045	0.097	0.108	0.012	0.04	0.6
Carp	92-11-0046	0.102	0.018	0.008	0.03	0.8
Carp	92-11-0047	0.120	0.029	0.012	0.03	0.7
Carp	92-11-0048	0.066	0.012	0.007	0.02	0.6
Carp	92-11-0049	0.069	0.012	0.007	0.02	0.5

The Cheatham Reservoir fish samples (92-11-0042 to 92-11-0049) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobezene, and methoxychlor however; none were detected in the fish. Lead, chromium, cadmium and arsenic were at non-detectable levels.

DALE HOLLOW LAKE

Dale Hollow Lake has some of the best lake water quality in the state. The reservoir is located in the Upper Cumberland drainage area in Clay, Pickett, Overton, and Fentress Counties of Tennessee. A portion of the lake is in Cumberland and Clinton Counties of Kentucky. The HUC TN05130105 is assigned to the Obey River subwatershed where Dale Hollow Lake is located.

Dale Hollow was created by impounding the Obey River near Celina in 1953 by the Corps of Engineers. Dale Hollow is considered fully supporting its designated uses. However, a portion of the Obey River downstream of the Dale Hollow dam is partially supporting due to flow alteration and low dissolved oxygen. Several headwater streams, including the East and West Forks of the Obey, are impacted by abandoned mines.

In April of 1993, a fish tissue study was conducted at Dale Hollow Lake near the dam. This station was selected because it was thought to be a reference quality waterbody that could provide information about background conditions. The only source of organic contaminants in Dale Hollow was thought to be atmospheric deposition. The results of the study are indicated in the tables below.

Dale Hollow Lake Fish Collection Table

Sampling location: At the dam
Collection date: April 20, 1993

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid
Channel catfish	93-05-0173	1	5 lb 1 oz	NT
Channel catfish	93-05-0222	4	2 lb 5 oz	4.90
LgMo bass	93-05-0223	5	2 lb 5 oz	2.36
Walleye	93-05-0224	5	4 lb 4 oz	1.55

Type of fish	Lab number	PCBs Ppm	DDT ppm	Chlordane ppm	HCB Ppm	Dioxin ppt
Channel catfish	93-05-0173	NT	NT	NT	NT	0.18
Channel catfish	93-05-0222	ND	0.053	0.021	0.002	NT
LgMo bass	93-05-0223	ND	0.021	0.009	ND	NT
Walleye	93-05-0224	ND	0.022	0.008	ND	NT

The Dale Hollow fish samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, and methoxychlor however; none were detected in the fish. Metals were not tested at this site.

DOUGLAS RESERVOIR

Douglas Reservoir is in the French Broad River Basin, HUC TN06010107, and encompasses approximately 30,400 acres in Jefferson, Sevier, and Cocke Counties of Tennessee. The reservoir is considered fully supporting its designated uses. Several fish tissue studies have been conducted on Douglas Reservoir by Water Pollution Control. Due to the influence of the Pigeon River, a tributary to the lake, the Division was concerned about the possibility that dioxin levels were elevated. Sample collection took place in 1992, 1995, and 1996. (TVA collected the fish samples in 1992.) The results are listed below.

1992 Douglas Reservoir Fish Data Collection Tables

Sampling location: At river mile 61 (Rankin Bridge)
Collection date: November 9, 1992

Type of fish	Lab number	Number of fish	Avg fish Weight	% Lipid	PCBs Ppm	DDT Ppm	Chlordane ppm	Dioxin ppt
LgMo bass	93-04-0180	5	1 lb 11 oz	0.16	ND	0.005	0.011	NT
Carp	93-04-0181	5	4 lb 10 oz	1.43	0.129	0.021	0.014	NT
Channel catfish	93-04-0182	5	2 lb 7 oz	5.38	0.192	0.164	0.076	NT
LgMo bass	93-04-0183	1	2 lb 5 oz	NT	NT	NT	NT	0.26
Carp	93-04-0184	1	7 lb 2 oz	NT	NT	NT	NT	1.62
Channel catfish	93-04-0185	1	4 lb 7 oz	NT	NT	NT	NT	3.03
Channel catfish	93-04-0186	1	3 lb 2 oz	NT	NT	NT	NT	2.58

Douglas Reservoir Fish Collection and Data Table

Sampling location: At river mile 33
Collection date: November 12, 1992

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	PCBs Ppm	DDT ppm	Chlordane ppm	Dioxin ppt
LgMo bass	93-04-0187	4	3 lb 2 oz	1.04	ND	0.023	0.116	NT
LgMo bass	93-04-0188	1	5 lb 11 oz	2.44	0.053	0.020	0.095	1.02
Carp	93-04-0189	5	3 lb 13 oz	0.037	ND	0.003	0.029	NT
Carp	93-04-0190	1	4 lb 10 oz	NT	NT	NT	NT	0.49
Channel catfish	93-04-0191	1	8 lb 1 oz	4.98	0.306	0.085	0.106	1.73
Channel catfish	93-04-0192	2	2 lb 9 oz	NT	ND	0.026	0.110	NT

1995 Douglas Reservoir Fish Data Collection and Organic Table

Sampling location: At the dam, river mile 33
Collection date: August 8, 1995

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	PCBs Ppm	DDT ppm	Chlordane ppm	Dioxin ppt
LgMo bass	9508114-08	1	2 lb	1.28	ND	0.012	0.005	0.26
LgMo bass	9508114-09	4	1 lb 10 oz	0.75	ND	0.009	0.0033	0.18
Channel catfish	9508114-10	1	1 lb 7 oz	2.41	ND	0.024	0.009	0.16
Carp	9508114-11	1	2 lb 14 oz	1.72	ND	0.017	0.007	0.20

Douglas Reservoir Fish Metals Table

Type of fish	Lab number	Mercury ppm	Chromium ppm	Copper Ppm	Lead ppm	Arsenic ppm
LgMo bass	9508114-08	0.17	0.08	1.60	0.03	ND
LgMo bass	9508114-09	0.20	0.04	3.20	0.18	0.07
Channel catfish	9508114-10	0.11	0.03	0.70	0.01	ND
Carp	9508114-11	0.15	0.02	0.60	0.07	ND

Douglas Reservoir Fish Data Table

Sampling location: Rankin Bridge river mile 61
Collection date: August 8, 1995

Type of fish	Lab number	Number of fish	Avg Fish Weight	PCBs ppm	DDT Ppm	Chlordane ppm	Dioxin ppt
Carp	9508114-12	1	4 lb 9 oz	0.073	0.062	0.019	1.50
Carp	9508114-13	2	3 lb 13 oz	ND	0.032	0.009	0.81
LgMo bass	9508114-14	1	5 lb 4 oz	0.029	0.032	0.010	0.32
LgMo bass	9508114-15	4	3 lb 6 oz	ND	0.016	0.006	0.50
Channel catfish	9508114-16	3	2 lb 7 oz	0.038	0.033	0.012	0.81

Douglas Reservoir Fish Data Table

Type of fish	Lab number	Mercury (ppm)	Chromium (ppm)	Copper (ppm)	Lead (ppm)
Carp	9508114-12	0.14	0.03	0.60	0.02
Carp	9508114-13	0.07	0.05	71.9	0.02
LgMo bass	9508114-14	0.41	0.03	0.70	0.01
LgMo bass	9508114-15	0.39	0.02	1.70	ND
Channel catfish	9508114-16	0.21	0.03	3.00	ND

Douglas Reservoir Fish Data and Organic Data Table

Sampling location: At the dam, river mile 33
Collection date: September 1996

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	PCBs ppm	DDT ppm	Chlordane ppm
Flathead catfish	9610005-01	3	2 lb 3 oz	0.81	ND	0.006	ND
Channel catfish	9610005-02	3	2 lb 6 oz	3.16	0.075	0.081	0.045
SmMo buffalo	9610005-03	5	2 lb 3 oz	6.21	ND	0.010	0.007
Carp	9610005-04	1	1 lb 6 oz	1.37	ND	0.006	ND
LgMo bass	9610005-05	5	2 lb 10 oz	1.75	ND	0.009	ND

Douglas Reservoir Metal and Dioxin Data Table

Type of fish	Lab number	Mercury Ppm	Chromium ppm	Copper Ppm	Arsenic ppm	Dioxin ppt
Flathead catfish	9610005-01	0.22	0.08	0.57	ND	0.12
Channel catfish	9610005-02	0.33	0.06	0.35	ND	0.53
SmMo buffalo	9610005-03	0.12	0.06	0.15	ND	0.28
Carp	9610005-04	0.12	0.05	1.89	ND	0.17
LgMo bass	9610005-05	0.20	0.51	ND	0.2	0.12

Douglas Reservoir Fish Data and Organic Table

Sampling location: Rankin Bridge river mile 61
Collection date: September 1996

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	PCBs ppm	DDT ppm	Chlordane ppm
Channel catfish	9610005-06	4	1 lb 3 oz	4.66	0.099	0.093	0.036
SmMo buffalo	9610005-07	2	4 lb 8 oz	8.19	ND	0.043	0.025
Carp sucker	9610005-08	3	2 lb 9 oz	3.59	0.139	0.097	0.031
Carp	9610005-09	5	3 lb 14 oz	3.14	0.071	0.071	0.022
LgMo bass	9610005-10	5	2 lb 9 oz	1.15	ND	0.015	0.005

Douglas Reservoir Metal and Dioxin Data Table

Type of fish	Lab number	Mercury Ppm	Chromium ppm	Copper ppm	Dioxin ppt
Channel catfish	9610005-06	0.25	0.05	0.54	1.49
SmMo buffalo	9610005-07	0.05	ND	0.17	1.05
Carp sucker	9610005-08	0.43	0.32	ND	1.01
Carp	9610005-09	0.14	0.05	0.41	1.63
LgMo bass	9610005-10	0.37	0.05	ND	0.29

EAST FORK POPLAR CREEK

The headwaters of East Fork Poplar Creek originate on the grounds of the Y-12 Plant on the Department of Energy's Oak Ridge Reservation. The Y-12 Plant has a past history of releasing radionuclides, organic compounds, and mercury. DOE's K-25 facility is also located on East Fork Poplar Creek.

The Poplar Creek embayment and the entire East Fork Poplar Creek have a "do not consume" fishing advisory due to mercury and PCBs. Additionally, there is also a bacteriological advisory on East Fork Poplar Creek. There have been several fish kills near Y-12. According to the 1996 305(b) Report, East Fork Poplar Creek is not supporting of its designated uses. Pollutants impacting the stream are mercury, lead, high bacteria levels, priority organics, radioactive cesium 127 and strontium 90.

A fish tissue study by Water Pollution Control was conducted at mile 2 of the creek on November 2, 1994. The results of the study are indicated in the tables below.

East Fork Poplar Creek Fish Data Table

Sampling location: River mile 2 below Oak Ridge STP
Collection date: November 2, 1994

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	PCBs Ppm	DDT ppm	Chlordane ppm	Dioxin ppt
Carp	9501031-01	1	8 lb	0.65	1.46	0.116	0.010	1.86
Carp	9501031-02	4	6 lb 11 oz	2.16	1.18	0.180	0.456	NT
Bullhead	9501031-03	3	73 oz	0.24	0.05	ND	0.005	NT
Redbreast sunfish	9501031-04	5	42 oz	0.36	0.067	0.004	0.008	NT
Redbreast sunfish	9501031-05	5	32 oz	0.81	0.067	0.015	0.008	NT
Rock bass	9501031-06	4	3 oz	5.53	0.066	0.190	0.013	NT
LgMo bass	9501031-07	1	9 oz	0.26	0.167	0.010	0.036	NT

Type of fish	Lab number	Mercury Ppm	Copper Ppm	Arsenic ppm
Carp	9501031-01	1.13	1.60	ND
Carp	9501031-02	0.93	0.90	ND
Bullhead	9501031-03	1.65	0.40	ND
Redbreast sunfish	9501031-04	1.15	0.50	ND
Redbreast sunfish	9501031-05	1.12	1.40	ND
Rock bass	9501031-06	0.20	0.20	0.06
LgMo bass	9501031-07	1.13	1.60	ND

The bullhead fish composite (9501031-03) consisted of 1 black and 2 yellow bullhead catfish. These East Fork Poplar fish samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish. There was no detection of cadmium, arsenic, or lead in these fish tissue samples.

FORT LOUDOUN RESERVOIR
(Little River Embayment)

Fort Loudoun Reservoir is posted for fish tissue consumption due to PCB contamination. The advisory states that catfish, largemouth bass over two pounds, and any largemouth bass from the Little River embayment should not be consumed. Commercial fishing for catfish is prohibited by the Tennessee Wildlife Resources Agency.

Multiple tributaries to Fort Loudoun Reservoir in the vicinity of Knoxville are considered impacted by urban runoff. Fish were collected in October of 1992. Each fish was tested individually. The tables below list results.

Fort Loudoun Lake Fish Data Table

Sampling location: Fort Loudoun Lake at the Little River Embayment
Collection date: October 22, 1992

Type of fish	Lab number	Avg fish weight	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	HCB ppm	Dioxin ppt
LgMo bass	92-10-0339	6 lb 1 oz	0.58	0.770	0.020	0.036	ND	1.39
LgMo bass	92-10-0340	4 lb 13 oz	0.40	0.357	0.013	0.023	ND	NT
LgMo bass	92-10-0341	3 lb 7 oz	0.79	0.613	0.007	0.065	ND	NT
LgMo bass	92-10-0342	2 lb 8 oz	0.19	0.126	0.085	0.014	ND	NT
LgMo bass	92-10-0343	2 lb 7 oz	0.58	0.253	0.017	0.027	ND	NT
LgMo bass	92-10-0344	1 lb 3 oz	0.59	0.107	0.006	0.013	ND	NT
LgMo bass	92-10-0345	1 lb 4 oz	0.00	0.089	0.008	0.020	ND	NT
Channel catfish	92-10-0346	2 lb 12 oz	0.39	0.359	0.003	0.009	ND	2.06
Channel catfish	92-10-0347	1 lb 2 oz	1.37	0.381	0.004	0.012	ND	NT
Channel catfish	92-10-0348	13 oz	0.77	0.810	0.042	0.036	ND	NT
Carp	92-10-0349	6 lb 8 oz	1.18	0.146	0.006	0.015	ND	0.29
Carp	92-10-0350	4 lb 14 oz	1.96	0.163	0.037	0.041	ND	NT
Carp	92-10-0351	4 lb 11 oz	0.39	0.209	0.01	0.017	ND	NT
Carp	92-10-0352	4 lb 11 oz	1.37	0.251	0.015	0.028	0.001	NT
Carp	92-10-0353	3 lb 15 oz	0.59	0.180	0.012	0.024	ND	NT

These fish samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, and methoxychlor however; none were detected in the fish.

Fort Loudoun Lake Fish Metals Table

Sampling location: Fort Loudoun Lake at the Little River Embayment
Collection date: October 22, 1992

Type of fish	Lab number	Mercury ppm	Copper ppm	Arsenic Ppm	Chromium ppm
LgMo bass	92-10-0339	0.20	0.6	ND	ND
LgMo bass	92-10-0340	0.17	0.3	0.05	ND
LgMo bass	92-10-0341	0.19	0.3	0.05	ND
LgMo bass	92-10-0342	0.06	0.4	0.06	ND
LgMo bass	92-10-0343	0.15	0.2	0.05	ND
LgMo bass	92-10-0344	0.07	0.2	ND	ND
LgMo bass	92-10-0345	NE	0.2	ND	ND
Channel catfish	92-10-0346	NE	0.4	ND	1.0
Channel catfish	92-10-0347	NE	0.8	ND	1.0
Channel catfish	92-10-0348	NE	0.4	ND	ND
Carp	92-10-0349	0.05	0.4	ND	ND
Carp	92-10-0350	0.03	0.6	ND	ND
Carp	92-10-0351	0.04	0.4	ND	ND
Carp	92-10-0352	0.04	0.7	ND	ND
Carp	92-10-0353	0.06	0.3	ND	ND

HIWASSEE RIVER

The Hiwassee River is in the Lower Tennessee River Basin. The headwaters of the Hiwassee originates in Georgia, then flows through North Carolina, into Polk, McMinn, Bradley, and Meigs Counties in Tennessee. The mouth of the Hiwassee is at Tennessee River (Chickamauga Lake), mile 501. Due to concerns about the possible contamination of fish by dioxin, sampling of Hiwassee fish has taken place since 1989. Both the Division of Water Pollution Control and Bowater Paper have collected fish on the Hiwassee for dioxin analysis. This report will deal with the sampling done in 1995 and 1996 by the Division of Water Pollution Control.

In August of 1995, fish were collected in the vicinity of the Bowater paper mill in Calhoun, Tennessee. The following table list results.

Hiwassee River Fish Collection and Metal Data Table

Sample location: Hiwassee River downstream of Bowater
Collection date: August 10, 1995

Type of fish	Lab number	Number of fish	Avg fish weight	% Lipid	Mercury Ppm	Lead ppm	Copper ppm	Chromium ppm
LgMo bass	9508123-01	1	4 lb 10 oz	1.37	0.43	0.01	0.4	0.04
LgMo bass	9508123-02	4	1 lb 2 oz	0.28	0.32	0.01	0.1	0.04
Carp	9508123-03	1	12 lb 1 oz	4.67	0.13	0.02	1.3	0.04
Carp	9508123-04	4	7 lb 10 oz	2.26	0.29	0.03	0.7	0.04
Channel catfish	9508123-05	1	3 lb 14 oz	9.00	0.11	ND	0.2	0.03
Channel catfish	9508123-06	1	3 lb 3 oz	1.82	0.14	0.02	1.2	0.04
Channel catfish	9508123-07	2	2 lb 3 oz	4.69	0.22	0.01	0.3	0.04

ND = Not detected

Hiwassee River Organic Data Table

Sample location: Hiwassee River downstream of Bowater
Collection date: August 10, 1995

Type of fish	Lab number	PCBs ppm	DDT Ppm	Chlordane Ppm	HCb ppm	Dieldrin ppm	Dioxin ppt
LgMo bass	9508123-01	0.112	0.020	0.026	0.001	0.021	1.23
LgMo bass	9508123-02	ND	0.005	0.004	ND	ND	NT
Carp	9508123-03	ND	0.021	0.015	ND	ND	1.38
Carp	9508123-04	0.031	0.019	0.008	ND	ND	0.54
Channel catfish	9508123-05	0.40	0.166	0.046	0.002	0.018	4.48
Channel catfish	9508123-06	0.048	0.020	0.011	ND	ND	1.06
Channel catfish	9508123-07	0.180	0.016	0.017	ND	ND	2.08

ND = Not detected; NT = Not tested. These fish samples were also tested for lindane, aldrin, endrin, alpha BHC, and methoxychlor however; none were detected in the fish.

Another intensive study was performed on the Hiwassee River in the spring and summer of 1996. Results of the study are depicted in the following tables.

Hiwassee River Fish Collection and Dioxin Data Tables for 1996

Sample location: Upstream of Bowater Paper, upstream of US route 11 bridge (approx. river mile 21)
Collection date: May 20, 1996

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin ppt	DDT ppm	PCBs ppm	Chlordane ppm
Spotted bass	9605167-01	2	1 lb 8 oz	0.43	0.46	0.006	0.052	ND
Channel catfish	9605167-02	2	2 lb 12 oz	9.01	4.01	0.046	0.235	0.083
SmMo buffalo	9605167-03	1	7 lb 2 oz	2.80	0.38	0.100	0.246	0.033
SmMo buffalo	9605167-04	2	3 lb 11 oz	4.10	1.18	0.019	0.088	0.017

These fish samples (9605167-01 - 9605167-04) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish.

Sample location: Downstream of Bowater Paper, near the Interstate 75 bridge (approx. river mile 16)
Collection date: May 20, 1996

Type of fish	Lab number	Number of fish	Avg fish weight	% Lipid	Dioxin ppt	DDT ppm	PCBs ppm	Chlordane ppm
LgMo bass	9605166-01	1	2 lb 5 oz	0.17	0.61	0.002	ND	ND
LgMo bass	9605166-02	3	13 oz	0.21	0.47	0.002	ND	ND
Blue catfish	9605166-03	2	6 lb 12 oz	11.3	2.85	0.032	0.144	0.077
Channel catfish	9605166-04	4	2 lb 10 oz	7.05	2.07	0.029	0.112	0.076
Common carp	9605166-05	1	19 lb	7.83	6.97	0.082	0.354	0.156
Common carp	9605166-06	3	11 lb 11 oz	4.31	3.16	0.020	0.094	0.039

These fish samples (9605166-01 - 9605166-06) were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish.

Hiwassee River Fish Collection and Dioxin Data Tables for 1996 (cont.)

Sample location: Downstream of Bowater at Hwy 58 bridge in the Wildlife Refuge (river mile 7.5)
Collection date: May 22, 1996

Type of fish	Lab number	Number of fish	Avg fish weight	% Lipid	Dioxin ppt	DDT ppm	PCBs ppm	Chlordane ppm
LM bass	9605168-01	5	2 lb	0.26	0.39	0.005	0.035	ND
Spotted sucker	9605168-02	3	2 lb 7 oz	0.66	0.84	0.002	ND	ND
SmMo buffalo	9605168-03	1	8 lb 12 oz	8.12	6.15	0.024	0.284	0.029
SmMo buffalo	9605168-04	1	2 lb 15 oz	4.04	2.05	0.007	0.078	0.019
Blue catfish	9605168-05	1	5 lb 12 oz	3.53	1.87	0.023	0.133	0.025
Channel catfish	9605168-06	5	3 lb 6 oz	5.20	5.89	0.053	0.226	0.057

The May 1996 fish collection was not analyzed for metals. Samples were also tested for lindane, aldrin, endrin, dieldrin, alpha BHC, hexachlorobenzene, and methoxychlor however; none were detected.

Sample location: Upstream of Bowater Paper, downstream of Oostanaula Creek
Collection date: August 20 - 23, 1996

Type of fish	Lab number	Number of Fish	Avg fish Weight	% Lipid	Dioxin ppt
Channel catfish	9608233-01	3	2 lb 1 oz	3.69	5.09
Walleye	9608233-02	6	4 lb 10 oz	0.71	1.26
LM/Spotted bass	9608233-03	4	14 oz	0.24	0.35
SmMo buffalo	9608233-04	2	3 lb 12 oz	2.95	0.79
Silver redhorse	9608233-05	7	3 lb 12 oz	1.42	0.41
Sptd/river carp sucker	9608233-06	2	2 lb 9 oz	0.93	0.19

Sample location: Downstream of Bowater Paper, near the Interstate 75 bridge (approx. river mile 16)
Collection date: August 20, 1996

Type of fish	Lab number	Number of Fish	Avg fish Weight	% Lipid	Dioxin ppt
Blue catfish	9608232-01	2	5 lb 13 oz	9.36	4.65
Channel catfish	9608232-02	4	2 lb 2 oz	3.18	3.28
Striped bass/Walleye	9608232-03	3	1 lb 11 oz	2.28	2.29
Spotted sucker	9608232-04	5	2 lb 4 oz	0.35	0.27
Silver redhorse/sucker	9608232-05	5	2 lb 8 oz	1.18	1.83
LgMo bass	9608232-06	3	1 lb 10 oz	0.42	0.74
SmMo buffalo	9608232-07	5	4 lb 6 oz	2.40	4.71
Carp	9608232-08	3	13 lb 4 oz	2.09	4.12

Sample location: At state route 58 bridge in the Wildlife Refuge (river mile 7.5)
Collection date: August 21, 1996

Type of fish	Lab number	Number of fish	Avg Fish Weight	% Lipid	Dioxin ppt
Channel catfish	9608233-07	5	3 lb	3.22	2.94
LM bass	9608233-08	5	1 lb 5 oz	0.83	0.92
Spotted sucker	9608233-09	5	2 lb 4 oz	0.68	1.05
SmMo buffalo	9608233-10	4	5 lb 8 oz	6.75	1.97
Carp	9608233-11	2	10 lb 7 oz	1.85	1.48
Walleye	9608233-12	1	1 lb 14 oz	0.59	1.44

Sample location: Upstream of Bowater Paper mill, downstream of Oostanaula Creek
 Collection date: August 20 - 23, 1996

Type of fish	Lab number	PCBs (ppm)	DDT (ppm)	Chlordane (ppm)
Channel catfish	9608233-01	0.342	0.059	0.061
Walleye	9608233-02	0.034	0.009	0.009
LM/Sptd bass	9608233-03	ND	0.006	ND
SmMo buffalo	9608233-04	0.152	0.019	0.016
Silver redhorse	9608233-05	0.039	0.007	0.009
Sptd/river carp sucker	9608233-06	0.029	0.007	0.008

Sample location: At state route 58 bridge in the Wildlife Refuge (river mile 7.5)
 Collection date: August 21, 1996

Type of fish	Lab number	PCBs (ppm)	DDT (ppm)	Chlordane (ppm)
Channel catfish	9608233-07	0.108	0.018	0.023
LM bass	9608233-08	0.071	0.009	0.011
Spotted sucker	9608233-09	ND	0.004	0.001
SmMo buffalo	9608233-10	ND	0.019	0.010
Carp	9608233-11	0.052	0.009	0.009
Walleye	9608233-12	0.030	0.006	0.007

Sample location: Downstream of Bowater Paper, near the Interstate 75 bridge (approx. river mile 16)
 Collection date: August 20, 1996

Type of fish	Lab number	PCBs ppm	DDTppm	Chlordane ppm
Blue catfish	9608232-01	0.675	0.089	0.094
Channel catfish	9608232-02	0.462	0.041	0.030
Stripped bass/Walleye	9608232-03	0.179	0.027	0.020
Spotted sucker	9608232-04	ND	ND	ND
Silver redhorse	9608232-05	ND	0.005	0.002
LgMo bass	9608232-06	ND	0.006	ND
SmMo buffalo	9608232-07	0.309	0.040	0.021
Carp	9608232-08	0.092	0.014	ND

The fish samples in the above tables were also tested for lindane, aldrin, endrin, dieldrin, alpha-BHC, hexachlorobenzene, and methoxychlor however; none were detected in the fish.

Hiwassee River Metal Tables for 1996

Sample location: Upstream of Bowater Paper mill, downstream of Oostanaula Creek
Collection date: August 20 - 23, 1996

Type of fish	Lab number	As (ppm)	Cr (ppm)	Cu (ppm)	Pb (ppm)	Hg (ppm)
Channel catfish	9608233-01	ND	0.08	0.31	ND	0.13
Walleye	9608233-02	0.1	ND	ND	ND	0.38
LM/Sptd bass	9608233-03	ND	ND	0.36	ND	0.27
SmMo buffalo	9608233-04	ND	ND	0.20	ND	0.09
Silver redhorse	9608233-05	ND	ND	ND	ND	0.04
Sptd/river carpsucker	9608233-06	ND	ND	0.37	ND	0.09

Sample location: Wildlife Management Station
Collection date: August 21, 1996

Type of fish	Lab number	As	Cr	Pb	Cu	Hg
Channel catfish	9608233-07	ND	ND	ND	ND	0.13
LM bass	9608233-08	ND	ND	ND	ND	0.28
Sptd sucker	9608233-09	ND	ND	ND	0.24	0.04
SmMo buffalo	9608233-10	ND	ND	ND	ND	0.07
Carp	9608233-11	ND	ND	ND	0.41	0.22
Walleye	9608233-12	ND	ND	ND	5.31	0.39

Sample location: Hiwassee River at I-75
Collection date: August 20, 1996

Type of fish	Lab number	As	Cr	Cu	Pb	Hg
Blue catfish	9608232-01	ND	ND	ND	ND	0.02
Channel catfish	9608232-02	ND	ND	ND	ND	0.20
Striped bass/Walleye	9608232-03	ND	ND	ND	ND	0.19
Spotted sucker	9608232-04	ND	ND	ND	ND	0.17
Silver redhorse	9608232-05	ND	ND	ND	ND	0.09
LM bass	9608232-06	ND	ND	ND	ND	0.43
SmMo buffalo	9608232-07	ND	ND	ND	ND	0.29
Carp	9608232-08	ND	ND	ND	ND	0.06

LOOSAHATCHIE RIVER

The Loosahatchie River is located in west Tennessee and runs through Hardeman, Fayette, and Shelby counties. In Shelby county, the Loosahatchie is posted due to chlordane from the mouth to mile 20.9. The advisory is a "do not consume" warning for all types of fish.

A fish collection was done on the Loosahatchie River in July of 1996. The collection took place at river miles 1 and 2. The tables below contains results.

Loosahatchie Fish Collection and Dioxin Table

Sample location: River mile 1 & 2

Collection date: July 23, 1996

Type of fish	Lab Number	Number of fish	Average fish weight	% Lipid	Dioxin
Flathead catfish	9608234-01	5	1 lb 15 oz	0.79	0.24
Channel catfish	9608234-02	3	1 lb 13 oz	6.07	0.85
Carp	9608234-03	5	2 lb 15 oz	4.57	0.80
Big mouth buffalo	9608234-04	2	3 lb	2.68	NT

Organic Fish Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Flathead catfish	9608234-01	ND	0.021	0.008	ND	0.001
Channel catfish	9608234-02	0.046	0.078	0.008	0.02	0.002
Carp	9608234-03	0.046	0.092	0.022	0.019	0.002
Big mouth buffalo	9608234-04	ND	0.087	0.012	ND	0.001

The samples were non-detect for lindane, aldrin, endrin, alpha-HCB, and methoxychlor.

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Flathead catfish	9608234-01	ND	ND	ND	ND	ND	0.39
Channel catfish	9608234-02	ND	ND	ND	ND	ND	0.20
Carp	9608234-03	ND	ND	ND	0.21	ND	0.33
Big mouth buffalo	9608234-04	ND	ND	ND	ND	ND	0.78

McKELLAR LAKE

McKellar Lake is an embayment of the Mississippi River near an industrialized area. Like the Mississippi River, McKellar Lake has a fish consumption advisory due to elevated chlordane levels. Dioxin levels have also historically been at levels of concern.

Fish collection was done on McKellar Lake in July of 1996. The table below lists the results.

McKellar Lake Fish Collection, Metal and Dioxin Data Table

Type of fish	Number of Fish	Avg. Fish Weight	Lab Number	% Lipid	Dioxin	Hg	Cr
Channel catfish	1	6 lb 15 oz	9608241-01	6.22	3.68	0.21	0.07
Channel catfish	4	3 lb 1 oz	9608241-02	11.6	NT	0.10	ND
Carp	5	2 lb 6 oz	9608241-03	5.68	3.10	0.12	ND
River carp sucker	4	1 lb 3 oz	9608241-04	5.74	NT	0.12	0.05
LM bass	5	1 lb 15 oz	9608241-05	1.27	0.71	0.39	ND

McKellar Lake Organic Data Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Channel catfish	9608241-01	0.13	0.131	0.167	0.041	0.011
Channel catfish	9608241-02	0.072	0.083	0.130	0.048	0.010
Carp	9608241-03	0.103	0.101	0.059	0.023	0.005
River carp sucker	9608241-04	0.078	0.050	0.072	0.028	0.007
LgMo bass	9608241-05	0.061	0.039	0.063	0.012	0.003

MISSISSIPPI RIVER

The Mississippi River in Shelby County has a consumption advisory due to chlordane. Commercial fishing has also been banned by the Tennessee Wildlife Resources Agency. In February, 1992, a fish tissue study was conducted at Tiptonville and Meeman Shelby State Park. Results are listed below.

Mississippi River Fish Tissue Metals Table

Sample location: near Tiptonville
Collection date: February 20, 1992

Type of fish	Number of Fish	Avg Fish Weight	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	1	7 lb 8 oz	92-03-0214	ND	ND	0.2	ND	ND	0.036
Blue catfish	1	6 lb 2 oz	92-03-0215	ND	ND	ND	ND	ND	ND
Blue catfish	1	4 lb 2 oz	92-03-0216	ND	ND	ND	ND	ND	0.035
Blue catfish	1	4 lb 2 oz	92-03-0217	ND	ND	ND	ND	ND	0.043
Blue catfish	1	2 lb 11 oz	92-03-0218	ND	ND	0.3	ND	ND	0.023
SmMo Buffalo	1	14 lb 12 oz	92-03-0219	0.06	ND	0.2	0.2	ND	0.042
SmMo Buffalo	1	10 lb 15 oz	92-03-0220	0.06	ND	0.4	ND	ND	0.035
BigMo Buffalo	1	9 lb 6 oz	92-03-0221	0.09	ND	0.4	0.2	ND	0.045
BigMo Buffalo	1	6 lb 10 oz	92-03-0222	0.05	ND	0.2	0.4	ND	0.103
SmMo Buffalo	1	6 lb 2 oz	92-03-0223	0.05	ND	0.7	0.3	ND	0.036

Sample location: Meeman Shelby State Park
Collection date: February 20, 1992

Type of Fish	Number of Fish	Avg Fish Weight	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	1	9 lb 6 oz	92-03-0224	ND	ND	0.7	0.3	ND	0.02
Blue catfish	1	1 lb 8 oz	92-03-0225	ND	ND	0.5	0.3	ND	0.029
Blue catfish	1	1 lb 5 oz	92-03-0226	ND	ND	0.4	0.3	ND	0.021
SmMo Buffalo	1	7 lb	92-03-0227	ND	ND	0.5	0.2	ND	ND
SmMo Buffalo	1	7 lb 2 oz	92-03-0228	0.05	ND	0.6	0.3	ND	0.091
SmMo Buffalo	1	4 lb 14 oz	92-03-0229	ND	ND	0.7	0.2	ND	0.027
Sauger	5	1 lb 11 oz	92-03-0230	ND	ND	0.6	0.3	ND	0.081
White bass	1	1 lb 5 oz	92-03-0231	0.09	ND	0.7	0.2	ND	0.046

Mississippi River Fish Tissue Organic Table

Sample location: near Tiptonville
Collection date: February 20, 1992

Type of fish	Number Of Fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	Dieldrin ppm	HCB ppm
Blue catfish	1	7 lb 8 oz	92-03-0214	7.7	1.09	0.162	0.192	0.071	ND
Blue catfish	1	6 lb 2 oz	92-03-0215	12.6	0.66	0.006	0.239	0.154	0.006
Blue catfish	1	4 lb 2 oz	92-03-0216	3.4	0.33	0.075	0.104	0.056	0.003
Blue catfish	1	4 lb 2 oz	92-03-0217	3.1	0.29	0.053	ND	0.048	0.004
Blue catfish	1	2 lb 11 oz	92-03-0218	3.8	0.32	0.069	0.103	0.049	0.003
SmMo Buffalo	1	14 lb 12 oz	92-03-0219	11.1	1.28	0.148	0.272	0.130	0.006
SmMo Buffalo	1	10 lb 15 oz	92-03-0220	18.2	1.26	0.178	0.280	0.165	0.006
BigMo Buffalo	1	9 lb 6 oz	92-03-0221	13.6	1.14	0.187	0.325	0.113	0.019
BigMo Buffalo	1	6 lb 10 oz	92-03-0222	4.4	0.41	0.069	0.107	0.040	0.005
SmMo Buffalo	1	6 lb 2 oz	92-03-0223	8.1	0.47	0.088	0.124	0.067	0.006

Sample location: Meeman Shelby State Park
Collection date: February 20, 1992

Type of fish	Number of fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	Dieldrin ppm	Endrin ppm
Blue catfish	1	9 lb 6 oz	92-03-0224	15.3	0.20	0.423	0.050	0.097	0.035
Blue catfish	1	1 lb 8 oz	92-03-0225	1.8	0.09	0.095	0.032	ND	ND
Blue catfish	1	1 lb 5 oz	92-03-0226	1.2	ND	0.013	0.020	ND	ND
SmMo Buffalo	1	7 lb	92-03-0227	9.0	0.19	0.084	0.016	0.062	ND
SmMo Buffalo	1	7 lb 2 oz	92-03-0228	6.9	ND	0.167	0.044	0.184	ND
SmMo Buffalo	1	4 lb 14 oz	92-03-0229	7.2	0.11	0.118	0.054	0.049	ND
Sauger	5	1 lb 11 oz	92-03-0230	1.8	ND	0.059	0.021	0.029	ND
White bass	1	1 lb 5 oz	92-03-0231	1.2	0.15	0.021	0.014	ND	ND

Aldrin, hexachlorobenzene, lindane, alpha-HCB, and methoxychlor were tested however, all were below detection limit.

Two fish samples were tested for dioxin in 1992. The table below shows the dioxin results for the 1992 collection. The samples were tested as individuals.

SITE	Type of fish	Avg Fish Weight	Lab Number	Dioxin (ppt)
Mississippi River- Tiptonville	Blue catfish	7 lb 8 oz	92-03-0214	2.21
Mississippi River-Meeman Shelby	Blue catfish	9 lb 6 oz	92-03-0224	5.24

Due to concerns raised by the results of the 1992 Mississippi River sampling, a three-year study was initiated by the Department of Environment and Conservation. The study started in 1995 and continued through 1997. The tables below depict the results of the survey.

Mississippi River Fish Tissue Organic Tables

Sample location: Memphis South Plant

Collection date: May 15, 1995

Type of fish	Number of fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT Ppm	Chlordane Ppm	Dieldrin ppm	HCB ppm	Dioxin ppt
Blue catfish	1	4 lb 5 oz	9506017-01	9.26	1.43	0.276	0.452	0.093	ND	14.73
Blue catfish	4	2 lb 15 oz	9506017-02	8.06	0.307	0.057	0.113	0.031	ND	5.21
Carp	1	6 lb 13 oz	9506017-03	3.65	0.182	0.067	0.057	0.022	ND	3.99
Carp	1	6 lb 1 oz	9506017-04	2.83	0.213	0.028	0.038	0.014	ND	NT
Carp	3	4 lb 6 oz	9506017-05	3.54	ND	0.018	0.023	ND	ND	NT

Sample location: Meeman Shelby State Park

Collection date: May 16, 1995

Type of fish	Number of fish	Avg fish weight	Lab Number	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	Dieldrin ppm	HCB ppm	Dioxin ppt
Blue catfish	3	2 lb 4 oz	9506017-06	3.74	0.266	0.166	0.043	0.026	ND	13.6
Carp	1	4 lb 4 oz	9506017-07	2.87	0.171	0.054	0.023	ND	ND	5.65
Carp	4	2 lb 7 oz	9506017-08	2.12	0.018	0.041	0.012	ND	ND	NT
LgMo bass	2	3 lb 2 oz	9506017-09	1.22	0.202	0.055	0.026	ND	ND	NT

Sample location: Osceola

Collection date: 5-17-95

Type of fish	Number of fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT ppm	Chlordane ppm	Dieldrin ppm	HCB ppm	Dioxin ppt
Blue catfish	5	2 lb 1 oz	9506017-10	4.28	0.558	0.041	0.052	ND	ND	2.84
Carp	1	5 lb 4 oz	9506017-11	1.41	0.075	0.024	0.009	ND	ND	1.81
Carp	1	11 lb 9 oz	9506017-12	0.93	ND	0.012	0.002	ND	ND	NT
SmMo buffalo	5	2 lb 6 oz	9506017-13	3.65	0.084	0.026	0.014	ND	ND	NT

Sample location: Tiptonville

Collection date: May 19, 1995

Type of fish	Number of fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT ppm	Chlordane ppm	Dieldrin ppm	HCB ppm	Dioxin ppt
Channel catfish	5	2 lb 1 oz	9506017-14	8.66	0.171	0.044	0.033	ND	0.002	7.52
Carp	5	1 lb 4 oz	9506017-15	1.96	ND	0.009	0.005	ND	ND	1.22
Hybrid bass	1	1 lb 4 oz	9506017-16	1.23	ND	0.012	0.010	ND	ND	NT

Sampling location: Blytheville
Collection date: May 18, 1995

Type of fish	Number of fish	Avg fish weight	Lab number	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	HCB ppm	Dioxin ppt
Blue catfish	1	8 lb 7 oz	9506017-17	3.88	0.145	0.026	0.037	0.001	2.47
Blue catfish	3	2 lb 14 oz	9506017-18	2.36	0.081	0.042	0.015	ND	NT
SmMo buffalo	1	6 lb 5 oz	9506017-19	6.82	0.104	0.039	ND	ND	5.83
SmMo buffalo	4	2 lb 6 oz	9506017-20	3.17	0.139	0.100	0.021	ND	NT
Hybrid bass	1	1 lb 11 oz	9506017-21	4.28	0.17	0.046	0.022	ND	NT

Mississippi River Fish Tissue Metal Tables

Sample location: Memphis South Plant
Collection date: May 15, 1995

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	9506017-01	ND	ND	0.04	0.3	ND	0.18
Blue catfish	9506017-02	ND	ND	0.06	0.2	ND	0.05
Carp	9506017-03	ND	ND	0.04	0.5	ND	0.11
Carp	9506017-04	ND	ND	0.04	0.5	ND	0.06
Carp	9506017-05	ND	ND	0.06	0.06	ND	0.06

Sample location: Meeman Shelby
Collection date: May 16, 1995

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	9506017-06	ND	ND	0.03	ND	ND	0.05
Carp	9506017-07	ND	ND	0.04	0.3	ND	0.15
Carp	9506017-08	ND	ND	0.04	0.3	ND	0.03
LgMo bass	9506017-09	ND	ND	0.05	0.9	ND	0.25

Sample location: Osceola
Collection date: 5-17-95

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	9506017-10	ND	ND	0.03	ND	ND	0.05
Carp	9506017-11	ND	ND	0.02	0.2	ND	0.11
Carp	9506017-12	ND	ND	0.04	0.4	ND	0.06
SmMo buffalo	9506017-13	ND	ND	0.03	0.1	ND	0.08

Sample location: Tiptonville
Collection date: May 19, 1995

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Channel catfish	9506017-14	ND	ND	0.03	0.2	ND	0.07
Carp	9506017-15	ND	ND	0.03	0.5	ND	0.04
Hybrid bass	9506017-16	ND	ND	0.03	0.1	ND	0.20

Sampling location: Blytheville
Collection date: May 18, 1995

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Blue catfish	9506017-17	ND	ND	0.03	ND	ND	0.15
Blue catfish	9506017-18	ND	ND	0.03	ND	ND	0.20
SmMo buffalo	9506017-19	ND	ND	0.04	0.4	ND	0.12
SmMo buffalo	9506017-20	ND	ND	0.04	0.1	ND	0.21
Hybrid bass	9506017-21	ND	ND	0.03	0.1	ND	0.13

The second phase of fish collection was done on the Mississippi River in July and August of 1996.

Mississippi River Fish Collection and Dioxin Data Table

Sampling location: Memphis South Plant
Collection date: July 24, 1996

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	% Lipid	Dioxin
Flathead catfish	9608234-15	3	1 lb 7 oz	1.00	0.66
Blue catfish	9608234-16	1	4 lb	4.05	1.28
Channel catfish	9608234-17	2	1 lb 13 oz	7.75	2.47
Common carp	9608234-18	2	4 lb 8 oz	4.80	NT
River carp sucker	9608234-19	1	1 lb 7 oz	1.93	NT
Striped bass	9608234-20	5	1 lb 3 oz	3.37	NT
LgMo bass	9608234-21	1	13 oz	1.07	NT

Mississippi River Organic Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Flathead catfish	9608234-15	0.038	0.016	0.017	ND	0.001
Blue catfish	9608234-16	0.077	0.053	0.045	0.030	0.002
Channel catfish	9608234-17	0.093	0.042	0.045	0.036	ND
Common carp	9608234-18	0.028	0.427	0.026	0.022	0.002
River carp sucker	9608234-19	0.076	0.038	0.022	0.009	0.002
Striped bass	9608234-20	0.140	0.136	0.037	0.029	0.003
LgMo bass	9608234-21	0.048	0.023	0.019	0.012	0.002

The fish samples were also tested for lindane, aldrin, endrin, alpha-HCB, and methoxychlor however; none were detected in the fish.

Mississippi River Metals Table

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Flathead catfish	9608234-15	ND	ND	ND	ND	ND	0.24
Blue catfish	9608234-16	ND	ND	ND	ND	ND	0.21
Channel catfish	9608234-17	ND	ND	ND	ND	0.48	0.13
Common carp	9608234-18	ND	ND	ND	0.36	ND	0.07
River carp sucker	9608234-19	0.1	ND	ND	ND	ND	0.19
Striped bass	9608234-20	0.1	ND	ND	ND	ND	0.39
LgMo bass	9608234-21	0.1	ND	ND	ND	ND	0.24

Mississippi River Fish Collection and Dioxin Data Table

Sampling location: Tiptonville river mile 875-882
Collection date: August 8, 1996

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	% Lipid	Dioxin
Common carp	9608240-01	1	15 lb 5 oz	6.22	2.26
Common carp	9608240-02	4	5 lb 6 oz	5.35	NT
Channel catfish	9608240-03	5	2 lb 15 oz	5.93	1.99
LgMo bass	9608240-04	1	3 lb 6 oz	1.21	0.61
Striped bass	9608240-05	5	1 lb 6 oz	4.31	NT
River carp sucker	9608240-06	5	2 lb 3 oz	2.94	NT

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Common carp	9608240-01	0.094	0.043	0.049	0.023	0.003
Common carp	9608240-02	0.145	0.048	0.044	0.029	0.004
Channel catfish	9608240-03	0.140	0.050	0.057	0.036	0.004
LgMo bass	9608240-04	0.058	0.033	0.019	0.007	0.001
Striped bass	9608240-05	0.079	0.054	0.028	0.024	0.002
River carp sucker	9608240-06	0.060	0.040	0.028	0.019	0.002

Mississippi River Metals Table

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Common carp	9608240-01	0.1	ND	0.07	ND	ND	0.16
Common carp	9608240-02	0.2	ND	0.05	0.17	ND	0.14
Channel catfish	9608240-03	ND	ND	ND	ND	ND	0.11
LgMo bass	9608240-04	ND	ND	0.06	ND	ND	0.55
Striped bass	9608240-05	ND	ND	ND	ND	ND	0.32
River carp sucker	9608240-06	ND	ND	0.05	ND	ND	0.14

Mississippi River Fish Collection and Dioxin Data Table

Sampling location: Osceola river mile 785

Collection date: August 6, 1996

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	% Lipid	Dioxin
Common carp	9608239-01	5	4 lb 15 oz	6.39	1.46
Channel catfish	9608239-02	1	20 lb 10 oz	12.3	7.66
Channel catfish	9608239-03	1	7 lb 6 oz	4.99	NT
Channel catfish	9608239-04	3	2 lb 2 oz	9.55	NT
LgMo bass	9608239-05	5	13 oz	0.63	0.20
Striped bass	9608239-06	5	14 oz	2.21	NT

Mississippi River Organic Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Common carp	9608239-01	0.289	0.083	0.024	0.026	0.002
Channel catfish	9608239-02	5.71	0.563	0.299	ND	0.015
Channel catfish	9608239-03	0.548	0.367	0.039	ND	0.002
Channel catfish	9608239-04	0.543	0.110	0.141	0.043	0.007
LgMo bass	9608239-05	0.144	0.015	0.012	0.007	0.002
Striped bass	9608239-06	0.550	0.042	0.026	0.019	0.001

Mississippi River Metals Table

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Common carp	9608239-01	ND	ND	ND	0.17	ND	0.11
Channel catfish	9608239-02	ND	ND	0.08	ND	ND	0.30
Channel catfish	9608239-03	ND	ND	ND	ND	ND	0.20
Channel catfish	9608239-04	ND	ND	0.10	ND	ND	0.07
LgMo bass	9608239-05	ND	ND	0.29	ND	ND	0.34
Striped bass	9608239-06	ND	ND	0.13	ND	ND	0.37

Mississippi River Fish Collection and Dioxin Data Table

Sampling location: Meeman Shelby river mile 751 - 759

Collection date: August 5, 1996

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	% Lipid	Dioxin
Common carp	9608239-07	1	3 lb 15 oz	3.44	NT
Channel catfish	9608239-08	1	3 lb 2 oz	7.08	4.07
Blue catfish	9608239-09	4	1 lb 6 oz	1.50	0.32
LgMo bass	9608239-10	1	5 lb 1 oz	0.42	0.24
LgMo bass	9608239-11	4	1 lb 14 oz	1.19	NT
Striped bass	9608239-12	5	1 lb 6 oz	3.31	NT
River carp/sucker	9608239-13	5	2 lb 5 oz	2.42	NT

Mississippi River Organic Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Common carp	9608239-07	0.241	0.045	0.017	0.009	0.002
Channel catfish	9608239-08	1.29	0.472	0.112	0.050	0.004
Blue catfish	9608239-09	0.294	0.117	0.019	0.009	0.002
LgMo bass	9608239-10	0.394	0.060	0.014	ND	0.002
LgMo bass	9608239-11	0.191	0.037	0.012	0.007	0.002
Striped bass	9608239-12	0.443	0.085	0.028	0.019	0.001
River carp/sucker	9608239-13	0.501	0.054	0.024	ND	0.001

Mississippi River Metals Table

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Common carp	9608239-07	ND	ND	0.07	0.25	0.60	0.14
Channel catfish	9608239-08	ND	ND	0.09	ND	ND	0.23
Blue catfish	9608239-09	ND	ND	0.07	ND	ND	0.17
LgMo bass	9608239-10	ND	ND	ND	ND	ND	0.62
LgMo bass	9608239-11	0.3	ND	0.07	0.26	ND	0.35
Striped bass	9608239-12	0.2	ND	0.07	0.15	ND	0.39
River carp/sucker	9608239-13	ND	ND	ND	ND	ND	0.22

Mississippi River Fish Collection and Dioxin Data Table

Sampling location: Blytheville river mile 816-820
Collection date: August 7, 1996

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	% Lipid	Dioxin
Common carp	9608239-14	5	6 lb 15 oz	5.43	1.61
Channel catfish	9608239-15	5	1 lb 13 oz	7.07	1.71
LgMo bass	9608239-16	1	3 lb 2 oz	0.80	0.41
Striped bass	9608239-17	5	1 lb 14 oz	3.46	NT
River carp sucker	9608239-18	5	1 lb 8 oz	3.33	NT

Mississippi River Organic Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dieldrin	HCB
Common carp	9608239-14	0.453	0.065	0.024	0.017	0.002
Channel catfish	9608239-15	0.599	0.049	0.040	0.034	0.003
LgMo bass	9608239-16	0.095	0.017	0.014	ND	ND
Striped bass	9608239-17	0.663	0.062	0.031	0.024	0.002
River carp sucker	9608239-18	0.646	0.049	0.038	0.023	0.003

Mississippi River Metals Table

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Common carp	9608239-14	0.7	ND	0.07	ND	ND	0.12
Channel catfish	9608239-15	ND	ND	0.06	ND	ND	0.08
LgMo bass	9608239-16	ND	ND	0.12	ND	ND	0.46
Striped bass	9608239-17	ND	ND	ND	ND	ND	0.42
River carp sucker	9608239-18	ND	ND	ND	ND	ND	0.20

NORTH FORK HOLSTON RIVER

A short portion of the North Fork of the Holston River is located in northeast Tennessee along the Hawkins and Sullivan county borders. The majority of the watershed is in Virginia and has the USGS HUC TN06010101. The North Fork Holston has a “do not consume” fish advisory due to mercury. The source of the mercury contamination is historic releases from the Olin factory near Saltville, Virginia.

Sample location: Clouds Ford
Collection date: December 11, 1995

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	Mercury	Copper	Lead
Northern hogsucker	9512074-01	2	1 lb 6 oz	0.50	0.5	ND
Northern hogsucker	9512074-02	3	10 oz	0.59	0.3	0.04
Redbreast sunfish	9512074-03	3	3 oz	0.44	0.2	ND
Rock bass	9512074-04	1	4 oz	0.78	0.3	ND
Rock bass	9512074-05	4	1 oz	0.75	0.2	ND
Golden redhorse	9512074-06	3	1 lb 3 oz	0.67	0.3	ND

PARKSVILLE RESERVOIR

There are a series of TVA reservoirs on the Ocoee River in Polk County Tennessee. The river begins in Georgia as Toccoa River and is renamed the Ocoee in Tennessee borders. The Ocoee has been impacted by contaminated sediment, metals, and acidity from historical mining activities in the Copper Basin. In response to elevated PCBs detected during TVA monitoring of Parksville Reservoir fish, TDEC also collected samples. The tables below list the results of the TDEC sampling.

Parksville Reservoir Fish Collection and Metal Data Table

Sample location: Ocoee Lake 1 at the dam, Parksville
Collection date: December 6-7, 1993

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	Mercury
LgMo bass	94-01-0073	5	1 lb 15 oz	0.076
Channel catfish	94-01-0074	1	4 lb 4 oz	0.076
Channel catfish	94-01-0075	1	2 lb 15 oz	0.026
Channel catfish	94-01-0076	1	1 lb 15 oz	0.040

Other metals tested and not detected were: arsenic, cadmium, chromium, copper, and lead.

Ocoee River Organic Data Table

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dioxin
LgMo bass	94-01-0073	0.07	ND	ND	NT
Channel catfish	94-01-0074	ND	ND	ND	0.931
Channel catfish	94-01-0075	0.07	0.26	0.088	NT
Channel catfish	94-01-0076	0.15	0.008	0.040	NT

The samples had undetectable levels of lindane, aldrin, endrin, dieldrin, hexachlorobenzene, alpha BHC, and methoxychlor. The fish were not tested for percent lipid content.

OCOEE #3 RESERVOIR

An embayment of the most upstream reservoir on the Tennessee section of the Ocoee was also sampled in 1993. (Conditions in the mainstem of this reservoir have produced a toxic effect on fish.) The embayment chosen for study was Tumbling Creek.

Ocoee River Fish Collection and Metal Data Table

Sample location: Ocoee Lake 3, Tumbling Creek
Collection date: December 8-9, 1993

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	Mercury	Lead	Copper
LgMo bass	94-01-0077	1	4 lb 3 oz	0.216	ND	ND
LgMo bass	94-01-0078	1	3 lb 15 oz	0.109	ND	ND
LgMo bass	94-01-0079	2	1 lb 3 oz	0.063	0.03	ND
Channel catfish	94-01-0080	1	1 lb 15 oz	0.112	0.03	0.10
Brn bullhead	94-01-0081	1	2 lb 12 oz	0.034	ND	0.10
Brn bullhead	94-01-0082	4	2 lb 2 oz	0.019	0.03	ND

Other metals tested and not detected were: arsenic, cadmium, and chromium.

Ocoee River Organic Data Table

Sample location: Ocoee Lake 3, Tumbling Creek
Collection date: December 8-9, 1993

Type of fish	Lab Number	PCBs	DDT	Chlordane	Dioxin
LgMo bass	94-01-0077	ND	ND	ND	NT
LgMo bass	94-01-0078	0.05	ND	ND	NT
LgMo bass	94-01-0079	ND	ND	ND	NT
Channel catfish	94-01-0080	ND	0.007	ND	NT
Brown bullhead	94-01-0081	0.07	0.005	ND	0.34
Brown bullhead	94-01-0082	ND	ND	ND	NT

The samples had undetectable levels of lindane, aldrin, endrin, dieldrin, hexachlorobenzene, alpha BHC, and methoxychlor. The fish were not tested for percent lipid content.

OLD HICKORY RESERVOIR

Old Hickory Reservoir is a Middle Tennessee reservoir on the Cumberland River upstream of Nashville. Old Hickory Reservoir is considered fully supporting according to the 1996 305(b) Report. Samples of Old Hickory Reservoir fish were collected in 1992 and were tested as individuals.

Old Hickory Reservoir Fish Collection and Metal Data Table

Sampling location: Old Hickory Dam
Collection date: August 12, 1992 and September 9, 1992

Type of fish	Lab Number	Avg Fish Weight	% Lipids	Mercury
Flathead catfish	92-11-0083	2 lb 14 oz	0.39	0.06
Channel catfish	92-11-0084	2 lb 8 oz	0.19	0.02
Channel catfish	92-11-0085	1 lb 10 oz	NT	0.02
Channel catfish	92-11-0086	1 lb 11 oz	NT	0.02
LgMo bass	92-11-0087	1 lb 10 oz	NT	0.02
Channel catfish	92-11-0088	1 lb 11 oz	NT	0.02
Carp	92-11-0089	8 lb 7 oz	NT	0.04
Carp	92-11-0090	5 lb 4 oz	2.78	0.04
Carp	92-11-0091	6 lb 5 oz	2.52	0.04
Carp	92-11-0092	4 lb 6 oz	1.36	0.03
Carp	92-11-0093	3 lb 3 oz	1.57	0.03
LgMo bass	92-11-0094	2 lb	1.18	0.03
LgMo bass	92-11-0095	2 lb 3 oz	0.58	0.08
LgMo bass	92-11-0096	2 lb	NT	0.03
LgMo bass	92-11-0097	1 lb 7 oz	NT	0.03

Old Hickory Reservoir Organic Data Table

Type of fish	Lab Number	PCBs	DDT	Chlordane
Flathead catfish	92-11-0083	ND	0.006	0.002
Channel catfish	92-11-0084	ND	0.402	ND
Channel catfish	92-11-0085	0.181	0.091	0.024
Channel catfish	92-11-0086	0.181	0.095	0.033
LgMo bass	92-11-0087	ND	0.004	ND
Channel catfish	92-11-0088	0.178	0.146	0.115
Carp	92-11-0089	0.155	0.04	0.009
Carp	92-11-0090	0.093	0.076	0.016
Carp	92-11-0091	0.044	0.144	0.027
Carp	92-11-0092	ND	0.018	0.01
Carp	92-11-0093	ND	0.010	ND
LgMo bass	92-11-0094	ND	0.013	ND
LgMo bass	92-11-0095	0.02	0.023	0.008
LgMo bass	92-11-0096	ND	0.003	0.001
LgMo bass	92-11-0097	ND	0.003	0.001

Channel catfish, lab number 92-11-0084, was analyzed for dioxin at Wright State University. The result was 0.49 ppt. In all fish, at undetectable levels were lindane, aldrin, endrin, dieldrin, hexachlorobenzene, alpha BHC, and methoxychlor.

PIGEON RIVER

The Pigeon River enters Cocke County in Tennessee from North Carolina near river mile 26. The river flows in a northwesterly direction until it reaches the French Broad River (Douglas Reservoir) near Rankin, Tennessee. Many studies and tests have been done on the Pigeon for fish tissue, mussels diversity, and water color. The major discharge into the Pigeon is Champion Paper Company in North Carolina. Fish tissue monitoring is done by Champion Paper as well as the Tennessee Division of Water Pollution Control, Carolina Power and Light, and Tennessee Wildlife Resources Agency.

In April of 1989, the State of Tennessee issued a "do not consume" fishing advisory due to dioxin contamination. The advisory covered the Pigeon from the North Carolina-Tennessee state line to the mouth. In March of 1996, the advisory was downgraded to a "precautionary advisory" for carp, catfish, and redbreast sunfish.

The tables below list results of samples collected in 1994 and 1995. The "Number of fish" column denotes the number of fish in each sample.

Pigeon River Fish Collection and Organic Data Tables

Sample location: River mile 7.5
Collection date: November 3, 1994

Type of fish	Lab Number	Number of Fish	Fish Weight	PCBs	DDT	Chlordane	% Lipid	Dioxin
Channel catfish	9501032-01	1	1 lb 14 oz	0.069	0.030	0.009	3.32	2.1

Sample location: Waterville Bridge river mile 24.5
Collection date: August 8, 1995

Type of fish	Lab Number	Number of Fish	Avg Fish Weight	PCBs	DDT	Chlordane	% Lipids	Dioxin
No. Hogsucker	9508122-01	1	11 oz	ND	0.002	ND	0.77	0.2
Rockbass	9508122-02	3	4 oz	ND	0.001	ND	0.62	0.18
Rbreast sunfish	9508122-03	1	5 oz	NT	NT	NT	NT	0.24

Sample location: River mile 7.5
Collection date: August 9, 1995

Type of fish	Lab number	Number of fish	Avg fish weight	PCBs ppm	DDT Ppm	Chlordane Ppm	% Lipid	Dioxin ppt
Carp	9508122-04	1	8 lb 2 oz	0.048	0.0147	0.006	2.17	0.51
Carp	9508122-05	2	5 lb 2 oz	0.048	0.014	0.007	0.56	0.56
LgMo bass	9508122-06	1	1 lb 8 oz	ND	0.007	0.005	0.76	0.14
Redbreast sunfish	9508122-07	5	6 oz	ND	0.005	0.003	0.80	0.13

Sample location: River mile 7.5
Collection date: August 24, 1995

Type of fish	Lab number	Number of fish	Avg fish weight	PCBs ppm	DDT ppm	Chlordane Ppm	% Lipid	Dioxin Ppt
Carp	9508157-01	1	13 lb 2 oz	0.053	0.014	0.006	1.60	0.23
Channel catfish	9508157-02	1	3 lb 6 oz	0.049	0.014	0.015	4.47	0.85
Channel catfish	9508157-03	3	2 lb 8 oz	0.073	0.043	0.008	3.66	1.26
Channel catfish	9508157-04	1	1 lb 15 oz	0.082	0.044	0.025	2.47	2.16
SmMo bass	9508157-05	1	1 lb 9 oz	ND	0.012	0.002	1.05	0.80

Pigeon River Metal Data Tables

Sample location: River mile 7.5
Collection date: November 3, 1994

Type of fish	Lab Number	Chromium	Copper	Lead	Mercury
Channel catfish	9501032-01	ND	0.40	ND	0.24

Sampling location: Waterville Bridge river mile 24.5
Collection date: August 8, 1995

Type of fish	Lab Number	Chromium	Copper	Lead	Mercury
Northern Hogsucker	9508122-01	0.16	10.1	0.04	0.04
Rockbass	9508122-02	0.06	0.50	0.02	0.07
Redbreast sunfish	9508122-03	NT	NT	NT	NT

Sampling location: River mile 7.5
Collection date: August 9, 1995

Type of fish	Lab Number	Chromium	Copper	Lead	Mercury
Carp	9508122-04	0.06	0.06	0.03	0.17
Carp	9508122-05	0.05	0.70	0.01	0.21
LgMo bass	9508122-06	0.09	2.70	0.02	0.18
Redbreast sunfish	9508122-07	0.05	0.90	0.01	0.06

Sampling location: River mile 7.5
Collection date: August 24, 1995

Type of fish	Lab Number	Chromium	Copper	Lead	Mercury
Carp	9508157-01	0.13	12.10	ND	0.17
Channel catfish	9508157-02	0.04	0.1	ND	0.12
Channel catfish	9508157-03	0.04	ND	ND	0.11
Channel catfish	9508157-04	0.04	0.4	ND	0.11
SmMo bass	9508157-05	0.04	ND	ND	0.24

REELFOOT LAKE

Reelfoot Lake covers 25,000 acres in Lake and Obion counties in Tennessee. The lake was generally thought to have been created during earthquakes in 1811-1812. Since the formation of Reelfoot Lake, a spillway and levee were added to help regulate the water levels. Sedimentation studies, Clean Lake studies, ambient monitoring, and fish tissue studies have all been done on Reelfoot Lake. The fish samples were collected in 1992. Some fish were tested as individuals while others were composited.



Reelfoot Lake in West Tennessee.

Reelfoot Lake Fish Collection, Organic, and Metal Data Tables

Sampling location: Reelfoot Lake at Blue Basin near Spillway

Collection date: October 26, 1992

Type of Fish	Lab Number	Number of fish	Avg fish Weight	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	DIOXIN Ppt	Mercury Ppm
LgMo bass	92-11-0058	5	1 lb 7 oz	0.59	ND	0.006	ND	NT	0.02
Carp	92-11-0059	1	15 lb 9 oz	5.10	ND	0.039	ND	NT	0.03
Carp	92-11-0060	1	12 lb 9 oz	7.62	ND	0.098	0.005	NT	0.03
Carp	92-11-0061	3	7 lb 10 oz	4.98	ND	0.059	0.003	NT	0.03
Channel catfish	92-11-0062	1	8 lb 2 oz	4.67	ND	0.040	0.007	0.16	0.02
Channel catfish	92-11-0063	1	7 lb 5 oz	1.99	ND	0.053	0.008	NT	0.02
Channel catfish	92-11-0064	1	5 lb 6 oz	4.72	ND	0.016	ND	NT	0.02

Sampling location: Upper Blue Basin at Walnut Log Ditch
Collection date: October 1992

Type of fish	Lab number	Number of fish	Avg fish Weight	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	DIOXIN ppt	Mercury ppm
LgMo bass	92-11-0065	1	3 lb 11 oz	0.79	ND	0.020	ND	NT	0.09
LgMo bass	92-11-0066	4	1 lb 14 oz	0.79	ND	0.021	ND	NT	0.06
Carp	92-11-0067	1	12 lb 6 oz	6.16	ND	0.046	ND	0.62	0.04
Carp	92-11-0068	4	6 lb 15 oz	5.95	ND	0.039	ND	NT	0.04
Channel catfish	92-11-0069	1	3 lb 8 oz	2.38	ND	0.026	ND	NT	0.02
Brown bullhead	92-11-0070	1	1 lb 13 oz	0.99	ND	0.008	ND	NT	0.02

Sampling location: Reelfoot Lake at Buck Basin Indian Creek
Collection date: October 1992

Type of fish	Lab Number	Number of fish	Avg fish weight	% Lipid	PCBs Ppm	DDT ppm	Chlordane ppm	Dioxin ppt	Mercury ppm
LgMo bass	92-11-0071	1	3 lb 4 oz	1.39	ND	0.020	ND	NT	0.05
LgMo bass	92-11-0072	4	2 lb 8 oz	0.79	ND	0.018	ND	NT	0.05
Carp	92-11-0073	1	13 lb 9 oz	4.26	ND	0.037	ND	NT	0.03
Carp	92-11-0074	1	12 lb 9 oz	1.58	ND	0.023	ND	NT	0.04
Carp	92-11-0075	1	6 lb 10 oz	6.45	ND	0.035	ND	NT	0.03
Bullhead catfish	92-11-0076	4	1 lb 12 oz	1.36	ND	0.01	ND	NT	0.05

In addition to PCBs and chlordane, non-detects were: hexachlorobenzene, lindane, aldrin, alpha-BHC, endrin, and methoxychlor. Non-detects for metals were: arsenic, cadmium, chromium, lead, and copper.

SOUTH FORK HOLSTON RIVER

The South Fork of the Holston River is in northeast Tennessee. Due to concerns about the presence of elevated dioxin levels in fish, the Department has sampled the river on multiple occasions. Results of samples collected in 1992, 1995, and 1996 are presented in the following tables.

South Fork Holston Fish Collection and Organic Data Table

Sampling location: Near the Ft. Patrick Henry dam
Collection date: September 28, 1992

Type of fish	Lab number	Number of fish	Avg fish Weight	% Lipid	PCBs ppm	DDT Ppm	Chlordane ppm	Dioxin ppt	Cu ppm	Hg Ppm
LM bass	93-04-0042	5	3 lb 10 oz	2.45	0.093	0.004	0.087	NT	0.4	0.04
Carp	92-11-0103	1	6 lb 7 oz	1.71	0.205	0.036	0.052	NT	0.5	0.10
Carp	93-04-0043	4	4 lb	2.40	0.341	0.110	0.068	NT	0.7	0.03
Channel catfish	92-11-0108	1	3 lb 3 oz	NT	ND	0.087	0.156	0.52	0.3	0.02

South Fork Holston Organics Table

Sample location: 100 yards downstream of the boat ramp
Collection date: October 21, 1992

Type of fish	Lab Number	% Lipid	PCBs	DDT	Chlordane	Dioxin	HCB	Lindane
Channel catfish	92-10-0327	NT	0.724	0.025	0.069	2.06	0.002	ND
Channel catfish	92-10-0328	3.12	0.506	0.026	0.107	1.60	0.002	0.002
Channel catfish	92-10-0329	3.16	0.499	0.018	0.087	2.60	0.002	0.002
Carp	92-10-0330	NT	0.578	0.226	0.338	NT	0.004	ND
Carp	92-10-0331	NT	1.24	0.05	0.237	5.67	0.004	0.003
Carp	92-10-0332	3.92	0.333	0.016	0.069	NT	0.002	0.002
Carp	92-10-0333	7.71	0.760	0.032	0.149	NT	0.004	0.003
Carp	92-10-0334	4.76	0.473	0.023	0.096	0.003	0.002	ND
LgMo bass	92-10-0335	NT	0.161	0.010	0.028	0.60	ND	ND
LgMo bass	92-10-0336	0.58	0.100	0.007	0.020	NT	ND	ND
LgMo bass	92-10-0337	NT	0.079	0.008	0.013	NT	ND	ND
LgMo bass	92-10-0338	0.97	0.078	0.002	0.006	NT	ND	ND

All samples above were individual fish. Dieldrin was detected in Carp individual 92-10-0333 at the level of 0.047 mg/kg.

South Fork Holston Metals Table

Sample location: 100 yards downstream of the boat ramp
Collection date: October 21, 1992

Type of fish	Lab Number	Copper	Mercury	Cadmium	Chromium	Lead
Channel catfish	92-10-0327	0.39	0.079	ND	ND	ND
Channel catfish	92-10-0328	0.35	0.071	ND	ND	ND
Channel catfish	92-10-0329	0.51	0.072	ND	ND	ND
Carp	92-10-0330	0.56	0.091	ND	ND	ND
Carp	92-10-0331	0.78	0.022	ND	ND	ND
Carp	92-10-0332	0.55	0.023	ND	ND	ND
Carp	92-10-0333	0.60	ND	ND	ND	ND
Carp	92-10-0334	0.99	ND	ND	ND	ND
LgMo bass	92-10-0335	0.98	0.041	ND	ND	ND
LgMo bass	92-10-0336	609	0.052	0.39	0.54	31
LgMo bass	92-10-0337	154	0.059	ND	ND	7.7
LgMo bass	92-10-0338	0.80	0.035	ND	ND	ND

South Fork Holston Fish Collection and Data Table

Sampling location: Ft. Patrick Henry tailwater
Collection date: August 18, 1995

Type of fish	Lab number	Number of fish	Avg fish weight	% Lipid	PCBs Ppm	DDT ppm	Chlordane Ppm	Dioxin ppt
Hybrid bass	9508124-01	1	1 lb 12 oz	8.37	1.39	0.1019	0.3218	7.11
SmMo bass	9508124-02	2	14 oz	4.18	0.190	0.009	0.033	1.60
Redbreast sunfish	9508124-03	1	4 oz	NT	NT	NT	NT	0.34
Channel catfish	9508124-04	1	4 oz	7.8	0.291	0.019	0.109	1.75
Redhorse	9508124-05	1	2 lb 11 oz	3.05	0.098	0.013	0.0124	0.81
Redhorse	9508124-06	4	1 lb 5 oz	6.82	ND	0.009	0.028	0.28

South Fork Holston Metals Table

Sampling location: Ft. Patrick Henry tailwater
Collection date: August 18, 1995

Type of fish	Lab number	Chromium ppm	Copper ppm	Lead Ppm	Mercury ppm
Hybrid bass	9508124-01	0.07	0.50	0.01	0.16
SmMo bass	9508124-02	0.09	3.60	ND	0.08
Channel catfish	9508124-04	0.04	0.30	ND	0.10
Redhorse	9508124-05	0.04	1.60	0.01	0.06
Redhorse	9508124-06	0.05	1.00	0.02	ND

South Fork Holston River Metal Table

Sample location: Army Ordinance
Collection Date: August 18, 1995

Type of fish	Lab number	Avg Fish Weight	Number of Fish	Hg	Cu	Lead	Chromium
Carp	9508115-14	11 lb 4 oz	1	0.48	0.20	ND	0.02
Carp	9508115-15	5 lb 1 oz	4	0.32	0.40	ND	ND
SmMo bass	9508115-16	2 lb 8 oz	1	0.51	0.60	ND	0.02
SmMo bass	9508115-17	2 lb	4	0.47	0.40	ND	0.02
Golden redhorse	9508115-18	2 lb 1 oz	2	0.29	0.20	ND	0.04

South Fork Holston River Organic Table

Sample location: Army Ordinance
Collection Date: August 18, 1995

Type of fish	Lab number	% Lipid	Dioxin (ppt)
Carp	9508115-14	1.66	1.41
Carp	9508115-15	3.24	0.79
SmMo bass	9508115-16	1.26	0.60
SmMo bass	9508115-17	0.63	0.18
Golden redhorse	9508115-18	4.2	0.97

Sample location: Upstream of the North Fork Holston and downstream of Mead
Collection date: August 18, 1995

Type of fish	Lab number	Avg Fish Weight	Number of Fish	Hg	Cu	Lead	Chromium
Carp	9508115-08	10 lb 13 oz	2	0.08	0.30	ND	ND
Carp	9508115-09	7 lb 7 oz	3	0.07	0.40	0.01	ND
LgMo bass	9508115-10	2 lb 14 oz	1	0.21	1.40	ND	0.02
LgMo bass	9508115-11	1 lb 5 oz	3	0.23	1.30	ND	0.03
SmMo bass	9508115-12	2 lb	1	0.30	0.10	ND	0.03
SmMo bass	9508115-13	1 lb 1 oz	2	0.15	0.40	ND	0.02

Sample location: Upstream of the North Fork Holston and downstream of Mead
Collection date: August 18, 1995

Type of fish	Lab number	% Lipid	Dioxin (ppt)
Carp	9508115-08	10.18	5.80
Carp	9508115-09	9.15	3.85
LgMo bass	9508115-10	0.91	0.42
LgMo bass	9508115-11	2.06	0.86
SmMo bass	9508115-12	0.63	0.18
SmMo bass	9508115-13	0.78	0.30

Sample location: Gotten Valley Road near Church Hill
Collection date: September 10, 1996

Type of fish	Number of Fish	Avg Fish Weight	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Channel catfish	1	4 lb 2 oz	9609169-01	ND	ND	0.07	0.66	ND	0.32
Yellow bullhead	1	6 oz	9609169-02	NT	NT	NT	NT	NT	NT
Common carp	2	15 lb 1 oz	9609169-03	0.3	ND	0.10	0.67	ND	0.48
Common carp	2	4 lb 7 oz	9609169-04	0.1	ND	0.12	0.67	ND	0.27
SmMo bass	1	3 lb	9609169-05	0.1	ND	0.08	1.54	ND	1.09
SmMo bass	4	11 oz	9609169-06	0.2	ND	0.08	0.44	ND	0.48
Black redbhorse	5	1 lb 4 oz	9609169-07	0.1	ND	0.09	0.45	ND	0.23

Sample location: Upstream North Fork, Downstream Meade
Collection date: September 11, 1996

Type of Fish	Number of Fish	Avg Fish Weight	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Common carp	1	19 lb 7 oz	9609170-01	0.3	ND	0.08	1.71	ND	0.34
Common carp	4	7 lb 15 oz	9609170-02	0.2	ND	0.08	0.89	ND	0.21
Golden redbhorse	4	1 lb 15 oz	9609170-03	ND	ND	0.08	0.47	ND	0.18
River carp sucker	9	2 lb 9 oz	9609170-04	0.2	ND	0.12	1.58	ND	0.24
SmMo bass	4	1 lb 2 oz	9609170-05	0.3	ND	0.39	2.45	ND	0.27
Yellow bullhead	1	2 oz	9609170-06	0.3	ND	0.08	0.45	ND	0.02
Channel catfish	1	2 lb 10 oz	9609170-07	0.2	ND	0.11	2.43	ND	0.42

Sample location: Downstream Fort Patrick Henry tailwaters
Collection date: September 12, 1996

Type of Fish	Number of Fish	Avg Fish Weight	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Channel catfish	2	3 lb 6 oz	9609171-01	0.2	ND	0.07	1.07	ND	0.06
Common carp	1	14 lb 9 oz	9609171-02	ND	ND	0.22	1.56	ND	0.18
Common carp	2	6 lb 3 oz	9609171-03	0.1	ND	0.09	1.00	ND	0.18
Black redhorse	5	2 lb 5 oz	9609171-04	ND	ND	0.07	0.52	ND	0.08
SmMo bass	1	2 lb 5 oz	9609171-05	ND	ND	0.20	3.10	ND	0.12
Spotted bass	1	9 oz	9609171-06	ND	ND	0.10	1.82	ND	NT

Sample location: Goshen Valley Road Church Hill
Collection date: September 10, 1996

Type of Fish	# of Fish	Avg Fish Weight	Lab Number	% Lipid	PCBs	DDT	Chlordane	Dioxin
Channel catfish	1	4 lb 2 oz	9609169-01	7.37	0.370	0.014	0.097	7.45
Yellow bullhead	1	6 oz	9609169-02	NT	NT	NT	NT	0.78
Common carp	2	15 lb 1 oz	9609169-03	5.47	0.421	0.016	0.071	5.32
Common carp	2	4 lb 7 oz	9609169-04	7.04	0.239	0.013	0.067	2.2
SmMo bass	1	3 lb	9609169-05	0.26	0.036	0.001	ND	0.20
SmMo bass	4	11 oz	9609169-06	0.85	0.062	0.002	0.005	0.67
Black redhorse	5	1 lb 4 oz	9609169-07	0.90	0.07	0.002	0.013	0.66

Sample location: Upstream North Fork, Downstream Mead
Collection date: September 11, 1996

Type Of fish	Number Of fish	Avg fish wt	Lab number	% Lipid	PCBs ppm	DDT ppm	Chlordane Ppm	Dioxin ppt
Common carp	1	19 lb 7 oz	9609170-01	10.4	0.504	0.018	0.112	8.12
Common carp	4	7 lb 15 oz	9609170-02	6.72	0.353	0.019	0.100	5.07
Golden redhorse	4	1 lb 15 oz	9609170-03	1.97	0.142	0.004	0.021	0.82
River carp sucker	9	2 lb 9 oz	9609170-04	3.06	0.291	0.008	0.045	2.82
SmMo bass	4	1 lb 2 oz	9609170-05	1.0	0.077	0.002	0.012	0.95
Yellow bullhead	1	2 oz	9609170-06	NT	NT	NT	NT	NT
Channel catfish	1	2 lb 10 oz	9609170-07	3.93	0.362	0.009	0.052	5.87

Sample location: Downstream Fort Patrick Henry tailwaters
Collection date: September 12, 1996

Type of fish	Number Of fish	Avg fish wt	Lab number	% Lipid	PCBs Ppm	DDT ppm	Chlordane Ppm	Dioxin ppt
Channel catfish	2	3 lb 6 oz	9609171-01	8.36	0.167	0.009	0.054	3.09
Common carp	1	14 lb 9 oz	9609171-02	1.94	0.35	0.013	0.045	3.39
Common carp	2	6 lb 3 oz	9609171-03	4.39	0.345	0.024	0.109	2.9
Black redhorse	5	2 lb 5 oz	9609171-04	3.02	0.10	0.007	0.027	0.49
SmMo bass	1	2 lb 5 oz	9609171-05	2.38	0.099	0.006	0.019	0.97
Spotted bass	1	9 oz	9609171-06	NT	NT	NT	NT	0.19

Sample location: Downstream of the Army Ordinance
Collection date: April 29, 1996

Type of fish	Lab number	Avg fish weight	Number of fish	Copper ppm	% Lipid	Dioxin ppt	PCBs ppm	DDT Ppm	Chlordane ppm
SmMo bass	9605028-01	1 lb 8 oz	5	0.4	0.49	0.25	ND	ND	0.004
Blue catfish	9605028-02	2 lb 12 oz	3	NT	NT	5.01	NT	NT	NT
Channel catfish	9605028-03	2 lb 2 oz	1	0.6	4.56	9.09	0.60	0.007	0.141
Common carp	9605028-04	10 lb 10 oz	3	ND	3.44	4.36	0.404	0.018	0.062
Common carp	9605028-05	3 lb 9 oz	2	NT	NT	1.43	NT	NT	NT
Golden redhorse	9605028-06	1 lb 4 oz	1	NT	NT	1.40	NT	NT	NT

All the above fish were collected downstream of the Army Ordinance except for the smallmouth bass composite 9605028-01. These fish were collected 200-400 yards downstream of the Highway 93 bridge.

Sample location: Fort Patrick Henry Tailwaters
Collection date: May 1, 1996

Type of fish	Lab number	Avg fish weight	Number of fish	% Lipid	Dioxin ppt	PCBs ppm	DDT ppm	Chlordane ppm	Copper ppm
Hybrid bass	9605028-07	14 lb 6 oz	1	NT	12.14	NT	NT	NT	NT
SmMo bass	9605028-08	2 lb 7 oz	2	2.88	1.22	0.151	0.010	0.021	NT
Rainbow trout	9605028-09	2 lb 4 oz	1	NT	0.18	NT	NT	NT	2.5
Common carp	9605028-10	5 lb 10 oz	1	9.5	3.53	0.411	0.031	0.131	0.45
White sucker	9605028-11	2 lb 7 oz	7	2.38	0.76	ND	0.012	0.015	

Sample location: Upstream of the confluence of the North Fork of the Holston River
Collection date: May 2, 1996

Type of fish	Lab number	Avg fish weight	Number of fish	Copper ppm	% Lipid	Dioxin ppt	PCBs Ppm	DDT ppm	Chlordane ppm
Largemouth bass	9605028-12	4 lb 14 oz	1	0.5	0.47	0.85	ND	ND	0.01
Largemouth bass	9605028-13	3 lb 14 oz	1	NT	NT	0.36	NT	NT	NT
Largemouth bass	9605028-14	1 lb 9 oz	4	NT	NT	0.63	NT	NT	NT
SmMo bass	9605028-15	2 lb 8 oz	1	0.7	0.98	0.83	0.203	0.011	0.016
SmMo bass	9605028-16	1 lb 4 oz	4	NT	NT	0.84	NT	NT	NT
Yellow bullhead	9605028-17	8 oz	1	NT	NT	0.52	NT	NT	NT
Common carp	9605028-18	15 lb 4 oz	1	0.7	3.89	6.37	0.532	0.057	0.069
Common carp	9605028-19	7 lb 9 oz	4	NT	NT	5.29	NT	NT	NT
Golden redhorse	9605028-20	2 lb 4 oz	3	NT	NT	0.78	NT	NT	NT

TIMS FORD RESERVOIR

Tims Ford Reservoir is located in south-central Tennessee in Moore and Franklin Counties. It is in the Elk River Basin in the HUC of TN06030003. The lake is considered fully supporting of its designated uses. Fish tissue samples were collected in 1992.

TIMS FORD RESERVOIR FISH COLLECTION AND ORGANIC DATA TABLE

Sample location: Tims Ford Lake Highway 41 at Winchester
Collection date: September 1992

Type of fish	Lab number	Number of fish	Avg fish Weight	% Lipid	PCBs ppm	DDT ppm	Chlordane Ppm
LgMo bass	92-11-0077	1	2 lb 5 oz	0.405	ND	0.011	0.004
LgMo bass	92-11-0078	4	1 lb 8 oz	0.79	ND	0.013	0.003
Carp	92-11-0079	1	3 lb 10 oz	0.79	ND	0.008	0.002
Carp	92-11-0080	4	2 lb 9 oz	0.59	ND	0.011	ND
Channel catfish	92-11-0081	1	3 lb	0.39	0.215	0.118	0.022
Channel catfish	92-11-0082	1	2 lb 2 oz	1.99	0.288	0.144	0.045

TIMS FORD RESERVOIR METAL AND DIOXIN DATA TABLE

Sample location: Tims Ford Lake Highway 41 at Winchester
Collection date: September 1992

Type of fish	Lab Number	Mercury	Copper	Dioxin
LgMo bass	92-11-0077	0.13	0.2	NT
LgMo bass	92-11-0078	0.10	0.2	NT
Carp	92-11-0079	0.10	0.2	NT
Carp	92-11-0080	0.07	0.2	NT
Channel catfish	92-11-0081	0.16	0.2	0.70
Channel catfish	92-11-0082	0.20	0.2	NT

Other metals tested but not detected were: arsenic, cadmium, chromium, and lead.

WATTS BAR RESERVOIR

Fishing advisories have been in effect for parts of Watts Bar Reservoir since the 1980's. In October of 1986, a press release was distributed by the then, Department of Health and Environment, warning the public not to eat catfish caught within two miles of Fort Loudoun dam. After additional studies, a "no consumption" advisory was issued for catfish and rockbass. This modified advisory was issued in July of 1987.

Later studies documented conditions that justified an expansion of the advisory throughout the reservoir and added additional fish species. Fish tissue samples were collected by the Division of Water Pollution Control in November of 1992. The following tables provide the results of fish tissue monitoring.

Sample location: Tennessee River mile 560
 Collection date: November 18, 1992

Type of fish	Lab Number	Avg Fish Weight	Number of Fish	PCBs	DDT	Chlordane	DIOXIN
Channel catfish	93-04-0193	1 lb 10 oz	5	0.200	0.095	0.044	NT
Channel catfish	93-04-0194	5 lb 4 oz	1	NT	NT	NT	5.16
Channel catfish	93-04-0195	3 lb 7 oz	1	2.97	0.813	0.480	NT
Channel catfish	93-04-0196	3 lb 11 oz	1	2.28	0.549	0.324	NT

The fish samples were also tested for lindane, aldrin, endrin, dieldrin, hexachlorobenzene, alpha BHC, and methoxychlor however; none were detected. No metal testing was done on the samples.

WOLF RIVER

The Wolf River originates in Mississippi and flows westward through Fayette and Shelby counties toward Memphis and the Mississippi River. USGS catalogues the Wolf as 08010210. Many studies have been conducted on the Wolf during the late 1970's, 1980's and 1990's. Water Pollution Control has several ambient monitoring stations on the Wolf River including an ecoregion reference site. Like the Mississippi River, the Wolf River has a fishing advisory due to elevated chlordane levels. The Wolf River is posted from its mouth where it meets the Mississippi River to river mile 18.9. Chlordane, a pesticide, was used at one time to treat termites in homes and was used extensively in agriculture. The use of chlordane was banned in the late 1970's due to its chronic effects on the liver, toxicity to birds and aquatic organisms, and probable tumor forming capacity in humans.

The 1996 assessment of the Wolf River in Tennessee's 305(b) Report points to pathogens, siltation, suspended solids, and contaminated sediments as being reasons for not supporting designated uses. In July of 1996, fish collection was done on the Wolf upstream of Highway 51. Results are listed below.

ORGANIC DATA TABLE

Type of fish	Number of Fish	Avg Fish Weight	Lab Number	% Lipid	PCBs	DDT	Chlordane	Dieldrin	Dioxin
Flathead catfish	2	2 lb 5 oz	9608234-05	1.99	0.076	0.062	0.093	0.025	0.62
Channel catfish	3	2 lb 4 oz	9608234-06	2.17	0.075	0.060	0.064	0.019	0.96
Carp	5	3 lb 3 oz	9608234-07	1.97	ND	0.019	0.053	0.019	NT
River carpsucker	4	2 lb 4 oz	9608234-08	4.27	0.094	0.102	0.186	0.048	NT
LM/Striped bass	4	6 oz	9608234-09	0.82	ND	0.027	0.036	0.021	0.20

METAL DATA TABLE

Type of fish	Lab Number	As	Cd	Cr	Cu	Pb	Hg
Flathead catfish	9608234-05	ND	ND	ND	ND	ND	0.30
Channel catfish	9608234-06	ND	ND	ND	ND	ND	0.19
Carp	9608234-07	ND	ND	ND	ND	ND	0.13
River carp sucker	9608234-08	ND	ND	ND	0.18	ND	0.31
LM/Striped bass	9608234-09	ND	ND	ND	0.99	ND	0.47

WOODS RESERVOIR

Woods Reservoir is approximately 3,908 square acres in size and is located in Franklin County near the city of Tullahoma. The impoundment was created in 1952 by the United States Air Force for cooling water purposes. The state of Tennessee currently advises "do not consume" catfish on Woods due to PCB contamination. The advisory went into effect August 19, 1987. Test results showed catfish were approximately 10 percent above the FDA action level for PCBs. Woods Reservoir is the only middle Tennessee waterbody with any fish tissue posting.

In April of 1992, the Division of Water Pollution Control conducted a study of Woods Reservoir fish. The results are listed below.

WOODS RESERVOIR FISH COLLECTION AND ORGANIC TABLE

Sample location: Rollins Creek
Collection date: April 27, 1992

Type of fish	Lab Number	Number of fish	Avg fish weight	% Lipid	PCBs Ppm	DDT ppm
Lg Mo bass	92-04-0291	1	3 lb 10 oz	2.56	0.94	ND
Lg Mo bass	92-04-0292	1	3 lb 5 oz	1.38	0.35	ND
Lg Mo bass	92-04-0293	1	3 lb	1.95	0.35	0.04
Lg Mo bass	92-04-0294	2	1 lb 14 oz	1.37	0.16	0.04

Sample location: Bromalow Creek
Collection date: April 27, 1992

Type of fish	Lab Number	Number of fish	Avg fish weight	% Lipid	PCBs Ppm	DDT ppm
Lg Mo bass	92-04-0295	1	3 lb 6 oz	1.37	0.55	0.17
Lg Mo bass	92-04-0296	1	2 lb 11 oz	1.94	0.50	0.19
Lg Mo bass	92-04-0297	3	1 lb 5 oz	0.39	0.19	ND

Sample location: Highway 21 Causeway
Collection date: April 27, 1992

Type of fish	Lab Number	Number of fish	Avg fish weight	% Lipid	PCBs Ppm	DDT ppm
Lg Mo bass	92-04-0298	1	4 lb 4 oz	0.79	0.19	0.04
Lg Mo bass	92-04-0299	1	2 lb 8 oz	1.17	0.13	ND
Lg Mo bass	92-04-0300	3	2 lb 5 oz	1.17	0.12	0.03

ND = Not Detected; NT = Not Tested

The samples were also tested for lindane, aldrin, endrin, dieldrin, hexachlorobenzene, alpha BHC, and methoxychlor however; none were detected in the fish.